dcTrack

User Guide
Release 2.4

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Chapter 1 Introduction

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Related Documentation

The dcTrack User Guide is accompanied by a dcTrack Quick Setup Guide.

dcTrack Overview

dcTrack™ is a powerful and intelligent data center management and automation application. dcTrack has been designed by data center and IT professionals to provide broad and deep visibility into the data center. It empowers data center managers to plan for growth and change by optimizing their current operations, assets, and infrastructure.

With dcTrack you can view everything in the data center from servers, blades, virtual servers and applications to data networks, IP addressing space and cabling. dcTrack also allows you to track real-time power consumption and manage raised floor space and rack elevations.

Use dcTrack to build your data center map directly or import existing data center information into the dcTrack. If you currently maintain data center information in spreadsheet format, that data can be imported into dcTrack using the Import wizard. Further, dcTrack allows you to import AutoCAD® objects to build a data center map.

Isolate potential problems with dcTrack since end-to-end power and data circuits can be visually and accurately traced while identifying all intermediate circuit points.

By using dcTrack's workflow and change management feature, data center managers are better able to enforce best practices across the enterprise and meet ITIL framework guidelines.

Chapter 2 Getting Started

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dcTrack Clients

dcTrack uses two clients:

- Management Client - A web-based client used to log in and then launch the dcTrack Windows Client, create and maintain users, manage licenses, backup and restore your data, and administer the appliance.
- Windows Client - A Windows-based client used to manage and view data center items, perform certain application administration tasks, manage work orders, generate reports and so on.

Following is a list of the various tasks associated with dcTrack and the associated client you use to perform them:

Task	Management Client	Windows Client
Add, edit and delete users	✓	
Change administrator password	✓	
Manage licenses	✓	
Configuring LDAP authentication	✓	
Back up and restore	✓	
Change user and admin passwords	✓	
View licenses	✓	✓
Add, edit and delete teams		✓
View user activity reports	✓	✓
Manage user settings	✓	✓
Add, edit and delete data center items		✓

Task	Management Client	Windows Client
Build, edit and disconnect connections		✓
Manage requests and work orders		✓
Generate and view reports		✓
Manage libraries		✓
Manage lists		✓
Manage subnets		✓

Virtual Machine Requirements

The following minimum VMware host configuration must be met:

- Number of CPUs: 1
- RAM (GB): 2
- Datastore (GB): 80
- CPU (GHz): 2.8
- OS: Linux - other (32-bit)
- VMware: ESX/ESXi 4.0

dcTrack Windows Client Requirements and Supported Software

The Windows Client requires the following to be installed in order to use dcTrack.

Requirements	
Workstation hardware (minimum)	Dual core processor, 2 GHz, 2GB of RAM, 50MB of free disk space
Operating system	Windows® 7 operating system or Windows XP® operating system
Browsers	Internet Explorer® 7 or higher, or Firefox® 3.5 or higher *Note: To use Firefox 1.2.1 or higher with dcTrack, the Microsoft .NET® Framework Assistant must be installed. The dcTrack prerequisites installer*

Requirements	
	can deploy the add-on as well. *Note: If you are using Firefox running on a Windows 7 operating system, the Windows 7 User Account Control must be set to Never Notify during the installation and can then be set back.*
Microsoft® .NET Framework	3.5 *Note: .NET versions are not inclusive of past .NET versions. So, for example, if you are installing .NET 4.0 you must install .NET 3.5 SP1.*

When you launch dcTrack from the Management Client, the following software is installed automatically if it does not already exist on your machine. This software can also be re-installed, for example in order to repair issues, by clicking the Prerequisites button in the Management Client start page.

Add-ons and database drivers	
Microsoft Access® 2003 Runtime	Microsoft Access 2003 Runtime is installed when dcTrack is installed. Microsoft Access Macro Security is set to Low during the installation process. See your Microsoft Access documentation on how to set Macro Security if you wish to change the setting from Low to another level. *Note: Microsoft Access 2007 is not supported.*
PostgreSQL ODBC drivers and PostgreSQL ADO drivers	PostgreSQL ODBC drivers and PostgreSQL ADO drivers are required to run dcTrack. If these drivers are not already installed on your machine, they are installed automatically when you launch dcTrack.
Microsoft Office® file converter pack	If this is not already installed on your machine, it is installed automatically when you launch dcTrack.

The following software is supported by the dcTrack Windows Client but are not required in order to use dcTrack.

Supported software	
AutoCAD® 2009 or earlier	AutoCAD® .dwg files, which can be linked to an existing drawing of a data center floor plan (top view), are supported. *Note: AutoCAD 2010 and 2011 are not supported by dcTrack.*
Microsoft Visio®	Microsoft Visio® is also supported but Visio drawings must be saved in AutoCAD .dwg file format in order to import them into dcTrack.

Installation and Configuration

Note: The following virtual machine installation information is just one way in which the installation can occur. If as an administrator you have other installation preferences, follow those.

Uploading the dcTrack Image to the VMware Host

To upload the dcTrack image to the VMware host:

1. Connect to the host computer using VMware Infrastructure Client. You must log in as a user that has permission to create, start, and stop virtual machines.
2. Click the Summary tab and examine the Resources pane. Verify the datastore has 80GB free for a new virtual machine and 800MB free for the installation ISO file. The host machine can be either a local machine or network share.
3. Connect to the host computer using vSphere. You must log in as a user that has permission to create, start, and stop virtual machines.
4. In the resource window, right click and select the datastore where you want to store the dcTrack installation ISO file. The Datastore Browser opens. Alternatively, use the dcTrack DVD or point to NFS via a VMware client to retrieve the datastore.
5. In the Datastore Browser, click the upload tool and choose Upload File.
6. In the dialog that appears, navigate to the DVD and select the ISO within the DVD. Click on Open. The dcTrack ISO file appears in the Datastore Browser when the file upload completes.

Creating the dcTrack Virtual Machine

To create the virtual machine:

1. In the Command pane of the Summary tab, click New Virtual Machine.
2. Choose Custom in the New Virtual Machine wizard.
3. Enter a name for the virtual machine.
4. Choose a Datastore with at least 80GB of free space available.
5. Select "Linux for the Guest Operating system"', then select Other Linux (32-bit) from the Version drop-down.
6. Adjust the amount of memory allocated for the virtual machine.
7. Set the number of network adapters to one or two. If there are two network adapters, one can be used for external access to the web interface and the other can be used as a private LAN for communication with the PDUs and other data center devices.

   In either case, make sure Connect at Power On is checked, and leave all other settings at default.
8. Select LSI Logic for the Storage Adapter Types.
9. When prompted to select a disk, select Create Virtual Disk.
10. Set the Disk Capacity between 80GB and 160GB and select "Store with the virtual machine".
11. Leave all advanced options at default.

Loading dcTrack onto the Virtual Machine

To load dcTrack onto the virtual machine:

1. Select VM and right click Edit Settings.
2. Select Options > Advanced > Boot Options and select Force BIOS Setup.
3. Click "Power on" to power up the virtual machine.
4. Click on "disk" at the top of the console window and select "Connect to ISO image on datastore".
5. Select the datastore
6. Select the dcTrack ISO.
7. Click on the Console tab.
8. Click inside console window,
9. Use the Esc key to get to main BIOS page.

10. Exit the BIOS by selecting Exit Discarding Changes and using the Enter key. The dcTrack Kickstart page opens.
11. Type *2* for a VMware installation and press Enter to begin installation.
12. When the installation completes, disconnect the ISO disk and press Enter to reboot the dcTrack virtual machine. The virtual machine reboots and displays a console prompt.

Initial Configuration of dcTrack

After installing dcTrack, you must configure the system for access over the network.

To configure the system for access over the network:

1. Access the local port from the Console tab of the VMware Infrastructure Client.
2. When prompted to log in, use the username *config* and the password *raritan*. The dcTrack configuration page opens.

3. Select Networking Setup, then select Setup LAN 1 to configure the primary Ethernet port.
4. Press the Space bar to select Enable this LAN Port.
5. To manually assign the network settings to dcTrack, leave Use DHCP deselected. Type the IP address, network masks, and gateway into the appropriate fields.
6. Select Accept to reset the network interface with the new values.
7. If you are using a second network interface, select Setup LAN 2 from the Network Configuration menu and configure the secondary Ethernet port in the same manner as the first. **Optional**
8. Select Ping Network Test to ensure that dcTrack can communicate over the network. **Optional**

9. Setup the Name Servers under Network Configuration. If you do not setup the Name Server, DNS names cannot be resolved. **Optional**
10. In order to increase the secure access to dcTrack, it is advisable to disable SSH remote access to dcTrack. To disable SSH remote access to dcTrack, select System Services. Deselect Enable SSH. By default, the config account has access to dcTrack. SSH is re-enabled if a support connection is created. **Optional**
11. Select Exit from the main menu. You can now access dcTrack from any client on the network.

Logging In to dcTrack

The first time you log on to dcTrack, you will download dcTrack licenses. See ***Licensing*** (on page 16) for more information.

dcTrack supports the Windows 7® operating system and Windows XP® operating system, and Internet Explorer® and Firefox®. If you are using Firefox running on the Windows 7 operating system, additional steps must be taken the first time you log in. These steps are indicated here.

This information covers logging in to dcTrack for the first time. Once all licenses and necessary add-ons are installed, the majority of steps do not need to be repeated.

To log in:

- Firefox users running the Windows 7 operating system: If Firefox .NET Assistant® has not already been installed, set the Windows 7 User Account Control to Never Notify and restart Windows 7.

1. Connect to dcTrack using a web browser.
2. In the browser's address bar, enter the IP address or name assigned to dcTrack.
3. Answer yes to any security alerts and accept all certificates.
4. The first time you access dcTrack, the Licensing page opens.
   a. Click Add, then select your dcTrack license file. Licenses are .LIC files. Repeat this step to add incremental licenses if needed.

   Note: Your license file can be retrieved from the Raritan web site after you have activated your registration. To activate your registration, click the link in the "Thank you for registering" email from Raritan and create your user account. Once you create your account, look for a "Your Raritan software license key is available" email containing a link to your license file download page.

   b. Click Continue. If you see error messages and the Continue button is disabled, contact Raritan Technical Support. There may be a problem with your license file.
   c. Select Yes to the End User License Agreement and click Submit.

- Firefox users running the Windows 7 operating system: Restart Firefox.

5. Log in with the default username *admin* and password *raritan*.
6. Click Launch dcTrack to launch the dcTrack Windows Client.
   a. If you are using Firefox and do not have the .NET Framework add-on installed, the Launch dcTrack button will be disabled. Click Prerequisites to install the dcTrack add-ons. Check the "Install Mozilla Firefox .NET Framework assistant add-on" checkbox and click Next.

      If you are not using Firefox and are not planning on using it in the future, you do not need to install this add-on.

   b. Manually install the .NET Framework, which can be downloaded from www.microsoft.com/downloads. Reboot the machine.
7. If you are using the Windows 7 operating system, when you launch dcTrack, a prerequisites program runs and checks your local machine to make sure it has all required software installed. If it does, the dcTrack Windows Client will open. If it does not, the prerequisites program will walk you through the install.
   a. Click Install on the first dialog of the install wizard.
   b. Optionally, select the "Set MS Access security mode to low" on the "Setting MS Access 2003 security mode" dialog. Click Next.

   Note: If you do not set the Microsoft Access® security mode to low, dcTrack will still work but you will see security warnings each time you launch dcTrack. You must then answer all questions about blocking unsafe expressions with "No". If you set the security mode to low but want to change to a higher level later, see your Microsoft Access documentation on how to set Macro Security.

   ---

   c. Click Finish on the last dialog. All of the components required to run dcTrack are installed.

- If you are using Firefox on a Windows XP client, you must close and then reopen the browser to complete the installation. Log back in and launch dcTrack.
- Firefox users running the Windows® operating system: Reset the User Account Control to its previous setting and reboot. Log back in and launch dcTrack.

Change the Administrator Password

The administrator password is changed in the Management Client and can only be changed by the administrator. It is important to change the default administrator account password as soon as possible. This helps prevent unauthorized administrator access to dcTrack.

To change the administrator password:

1. Click the "admin" link at the top of the Management Client window,
2. Click Change Password on the "User Information for admin" page.
3. Type a new password for the admin account in the Password field, then type it again in the Confirm Password field.
4. Click Save.

   Or

5. Click the Settings tab.
6. Click User Accounts. The User Configuration page opens, displaying a list of all the user accounts created for the system.
7. Click Edit for the admin user.
8. Type a new password for the admin account in the Password field, then type it again in the Confirm Password field.
9. Click Save.

Configuring the System Clock

dcTrack uses the system clock to time-stamp events. Set the system clock as soon as possible to keep an accurate record of events. Using an NTP server is recommended to keep the system clock synchronized. These settings are configured in the Management Client.

Configuring NTP Server Settings

The NTP server settings are configured in the Management Client. The Configure Time Servers table lists the NTP servers the dcTrack appliance contacts to get date and time information. NTP must be enabled first.

The dcTrack appliance attempts to retrieve the date and time from the first server on the list. If this attempt fails, it proceeds down the list and attempts to contact the second server, then the third, and so on.

Note: The dcTrack appliance and not the dcTrack Windows Client uses NTP.

To enable NTP and configure NTP servers:

1. On the Settings tab, click Time Settings.
2. Select the Enable NTP checkbox then click Save.
3. Click Manage Time Servers to configure settings for the NTP servers.
4. Click Add.
5. Type the time server's IP address or DNS name in the Time Server field. If you are using the DNS name, it must be configured via the console.
6. Click Save Changes.

Licensing

dcTrack is licensed based on the number of cabinets maintained in the application. Contact Raritan Sales for additional information.

Adding a License

Licenses are added in the Management Client. If this is your first time logging in and you need to add a license file, see ***Logging In to dcTrack*** (on page 13).

Once you add a license file and log in for the first time, you can follow the instructions in this topic to add or remove license files as needed.

To add a license file:

1. On the Settings tab, click Product Licensing in the Appliance Administration section.
2. Click Add in the Licenses section.
3. Use the browse function to locate and add the license file.

Licenses are .LIC files. Repeat this step to add incremental licenses if needed.

Note: Your license file can be retrieved from the Raritan web site after you have activated your registration. To activate your registration, click the link in the "Thank you for registering" email from Raritan and create your user account. Once you create your account, look for a "Your Raritan software license key is available" email containing a link to your license file download page.

4. If you see error messages AND you're unable to use dcTrack or to add the total licensed number of PDUs, contact Raritan Technical Support. There may be a problem with your license file.

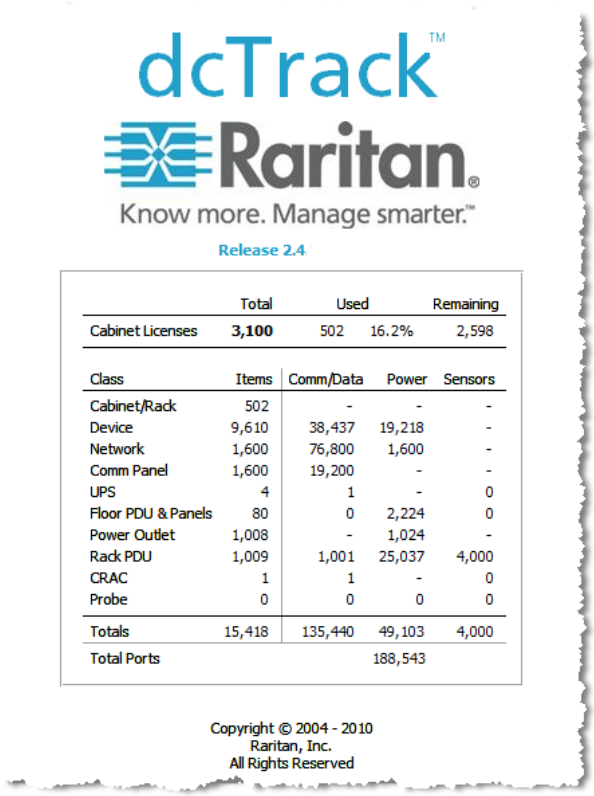
Viewing Licenses

The licenses that you have uploaded to dcTrack are available to view from either the dcTrack Windows Client or the Management Client.

Windows Client

In the dcTrack Windows Client, license information is available on the splash screen and in the dashboard at the bottom of the page.

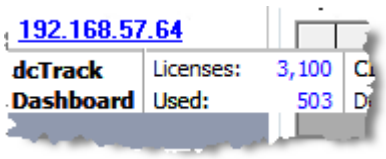
The splash screen provides a quick summary of licensed cabinets and total number of ports. See also ***Windows Client Splash Screen*** (on page 40). It also provides a summary of the items, comm/data ports, power ports, and sensors associated with each cabinet.



	Total	Used		Remaining
Cabinet Licenses	**3,100**	502	16.2%	2,598

Class	Items	Comm/Data	Power	Sensors
Cabinet/Rack	502	-	-	-
Device	9,610	38,437	19,218	-
Network	1,600	76,800	1,600	-
Comm Panel	1,600	19,200	-	-
UPS	4	1	-	0
Floor PDU & Panels	80	0	2,224	0
Power Outlet	1,008	-	1,024	-
Rack PDU	1,009	1,001	25,037	4,000
CRAC	1	1	-	0
Probe	0	0	0	0
Totals	15,418	135,440	49,103	4,000
Total Ports			188,543	

The dashboard displays the number of licenses and is visible the entire time you use the application. See ***Dashboard*** (on page 43).



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Management Client

Administrators can view and add dcTrack licenses from the Management Client.

To view licenses from the Management Client:

- On the Settings tab, click Product Licensing in the Appliance Administration section.

The Licenses list contains all license files that you have uploaded to dcTrack.

Feature	The feature that is allowed by this license.
Type	Initial: A required license to activate dcTrack and set the initial cabinet capacity allowed. Incremental: A secondary license type that allows you to add to the initial license's cabinet capacity.
Count	The number of cabinets that you can add to dcTrack under this license.
Licensee	Your company name.

Licensing Summary contains information about how many cabinets your combined licenses allow you to add to dcTrack.

Customer Name	Your company name.
Cabinet license capacity	The total number of cabinets allowed by all your licenses.
Cabinet licenses available	The number of cabinets remaining that you are allowed to add.

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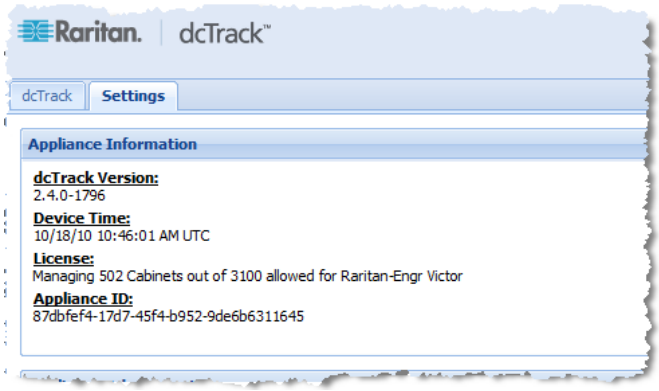
dcTrack Management Client Interface

The dcTrack Management Client is a browser-based interface made up of two tabs - the dcTrack tab and Settings tab.

The dcTrack Prerequisites program and the dcTrack Windows Client are launched from the dcTrack tab. You must have admin privileges to access the Settings tab and the various administrative functions associated with dcTrack such as managing users, managing licenses and so on. For a complete list of functions performed in the Management Client. See ***dcTrack Clients*** (on page 7).



The following options are only applicable to dcTrack users who are also using Power IQ. These options are accessed and enabled on the Settings tab of the Management Client even if you are not using Power IQ. However, they do not affect dcTrack functionality in any way.

- Configuring Language, Temperature and Currency
- Configuring Logging through Syslog
- Upgrading dcTrack Firmware
- Support Connections

Changing Your Password

Passwords are managed in the dcTrack Management client.

To change your password:

1. On the Settings tab, click Change Password. The Change Password dialog appears.
2. Enter your current password and then enter your new password in the New Password and Confirm Password fields. Click OK.

User Management - Management Client

dcTrack users are created and maintained in the dcTrack Management Client. See ***Adding, Editing, and Deleting Users*** (on page 25) for more details. The team's users are assigned to are created in the Windows® Client. See ***Teams*** (on page 158). Since users must be assigned to a team to use dcTrack, it is recommended that teams be created before user accounts but this is not required in order to create user accounts.

The level of access each user has to dcTrack functions is based on the access level they are assigned when they are created. Access levels are default "roles" that cannot be edited. See ***dcTrack User Access Levels*** (on page 22).

Once a user is created and given access to dcTrack, Gatekeepers can view all user information, such as the team the user belongs to, the access level the user has to the application and so on, from the Users page in the dcTrack Windows Client. The Users page also contains information on the user's activity since the last time they logged in to the application if they are currently using it, or their activity since the last time they logged out of the application. An option to change the user's default site and unit of measure, and the ability to clear the user's sort order(s) is also available on this page. All users with Manager access or below can view all of this information for their account.

Additional user information, such as the user's email address, current teams they are assigned to and so on, can be viewed in the Management Client by selecting Settings > User Accounts and then clicking on the user's login name on the Users page.

Site Administrator

The site administrator is responsible for installing and configuring dcTrack, including creating users. They have permission to do every action in the dcTrack Management Client, no exceptions. The Site Administrators group is assigned this role by default, and contains the Admin user.

The Administrator role is not a default role available in the Windows Client. This role is specific to installation and configuration of dcTrack and, in most cases, will be separate from that of the Windows Client Gatekeeper.

dcTrack User Access Levels

The following user access levels are specific to the dcTrack Windows Client and will be applied to users when they are created in the Management Client. These access levels are defaults and cannot be changed.

Edit Privileges by Role

The following restrictions exist for editing an item:

If...	then...
The System Admin field is blank and the Admin Team field is blank...	any user, with the exception of users with Viewer access, is allowed to make edits.
The System Admin field is blank and the Admin Team field is specified...	any user who is a Member of the team listed in the Admin Team is allowed to make edits.
The System Admin field is specified and the Admin Team is blank...	only the System Admin user is allowed to make edits.
The System Admin and the Admin Team fields are specified...	only the user listed in the System Admin or the Manager of the team listed in the Admin Team can make edits

Regardless of these rights, no edits can made to an item after the item request has been approved and until the item request is completed.

The following chart summarizes all possible edit scenarios using user XYZ and Team as example names and teams.

Username	User's team	User's access level	Item's system admin	Item's admin team	Can edit?
XYZ	Any or blank	Viewer	Any or blank	Any or blank	No
XYZ	Any	Member	Blank	Blank	Yes
XYZ	Any	Member	ABC	Any or blank	No
XYZ	Any	Member	XYZ	Any or blank	Yes
XYZ	Team1	Member	Blank	Team1	Yes
XYZ	Team1	Member	Blank	Team2	No
XYZ	Team1	Manager	Blank	Blank	Yes
XYZ	Any	Manager	XYZ	Any or blank	Yes
XYZ	Team1	Manager	ABC	Team1	Yes
XYZ	Team1	Manager	ABC	Team2	No
XYZ	Team1	Manager	Blank	Team1	Yes
XYZ	Team1	Manager	Blank	Team2	No
XYZ	Any	Gatekeeper	Any or blank	Any or blank	Yes
Any	Any	Any	A request for the item is approved but not completed.		No

Gatekeeper

The Gatekeeper is responsible for user and team management, data center change management and keeping the data in dcTrack in sync with actual conditions in the data center. Gatekeepers have access the Administration module of the dcTrack Windows Client.

The Gatekeeper can:

- Edit all items and connections, including "cleaning" data
- Approve, reject, mark as complete or archive requests
- Issue work orders, mark them as complete and archive them
- Update drop-downs
- Manage teams

Manager

Managers can view, add and edit items and connections in the dcTrack Windows Client so long as the team they belong to is listed under the Admin Team field for the currently selected item or if the Admin Team field is blank, in which case anyone except users with an access level of Viewer can make changes. A red lock icon is displayed when the current selected item is not editable.

Member

Members can view, add and edit items and connections in the dcTrack Windows Client so long as their name is listed under the System Admin field for the currently selected item or if the Admin Team field is blank, in which case anyone except users with an access level of Viewer can make changes. A red lock icon is displayed when the current selected item is not editable.

Viewer

Users with Viewer level access are able to access pages in the dcTrack Windows Client but cannot make changes to the data. Viewers can also access and view reports, which can then be printed.

Adding, Editing, and Deleting Users

User accounts are added, edited and deleted in the Management Client. You must have Site Administrator privileges to perform these tasks.

Teams, which users are assigned to, are managed in the Windows Client. See ***User Management - Windows Client*** (on page 158).

Note: It is recommended that teams be created before user accounts but this is not required in order to create user accounts.

Adding a User

To add a user:

1. Click the Settings tab.
2. Click User Accounts. The User Configuration page opens displaying a list of all the user accounts created for the system.
3. Click Add. A blank user information page opens.
4. Enter the Common User Information.
   a. Enter a username. User names must be at least 3 characters, but not more than 40 characters. For email notification to function in the dcTrack Windows Client, the user name must match the user's email account user name. **Required**
   b. Enter the user's first name.
   c. Enter the user's last name. **Required**
   d. Enter an email address. **Required**
   e. Password and Confirm Password: Enter a password for this user. The password must be at least 8 characters, including one numerical character, one uppercase character, one lowercase character, and one of the following special characters: ~!@#$%^&*()_+{}|:"<>?/.,';][=-`"). **Required**
   f. In the Description field, enter comments about the user.
5. Complete the Additional Fields.
   a. Enter the user's mail server. For example, `mail.company.com`.
   b. Enter the mail server's SMTP port. Default is 25.

   Note: If the mail server field is left blank, the user cannot receive email notifications.

   c. If a password is not required to access the SMTP, select the No Password checkbox.

d. Select the team this user is on. Teams must be created in dcTrack before you can assign them to users. See ***Teams*** (on page 158) in the dcTrack User Guide.

e. Select the user's access level from the Access Level drop-down. If the user is a Gatekeeper who should receive request notifications, select the Request Emails checkbox.

6. Click Add.

Editing a User

To edit a user:

1. In the Settings tab, click User Accounts.
2. Select a user and click Edit. The User Information page opens.
   - Click Edit to change the name information, email, notes, or dcTrack user information, such as Access Level and Team. Click Save after making changes.
   - Click Change Password to change the user's password. Enter the password, enter it again to confirm, then click OK.

Deleting a User

In the user list page, you can delete users who should no longer have access to the system. You cannot delete the admin user.

To delete a user:

1. Click the Settings tab.
2. Click User Accounts. The User Configuration page opens.
3. Click Delete in the row of the user you want to delete.
4. Click OK to delete the user.

Configuring dcTrack to use LDAP Authentication

As an alternative to using local user account management you can configure dcTrack to use an LDAP server or an Active Directory (AD) server for centralized authentication. An LDAP wizard guides you through this process, checking each configuration option. LDAP configuration includes four steps:

- Network connectivity settings
- Search and authentication settings
- Authorizing LDAP user accounts for dcTrack
- Confirmation and enabling LDAP access

Once enabled, all users must have an authorized account on the LDAP server to connect to dcTrack. The exception is the local account: admin. The admin account always has local access to make any necessary configuration changes.

Gathering LDAP Configuration Settings

The following is a list of configuration information you should know before enabling LDAP authentication in dcTrack. If you are not familiar with these settings, ask your LDAP administrator to help you prepare this list.

LDAP configuration settings:

- Type of LDAP Server used: Microsoft Active Directory or other LDAP server
- IP Address of the LDAP server
- Network port used by the LDAP server
  - If using a custom port number, what type of encryption is used: TLS, SSL or No Encryption?
- Base DN of the server (used for searching for users)
- Bind type of the server
  - Anonymous bind or standard binding
  - The bind DN setting, if using standard bind
  - The password, if using standard bind
- User ID attribute or the user attribute prefix for user DN
- User object class (if applicable)
- Additional object filters
- LDAP user access level within dcTrack
- User roles

Configuring LDAP: Connectivity

The first part of the LDAP setup is identifying the LDAP server on your network.

To configure LDAP connectivity:

1. On the Settings tab, click Authentication Source.
2. Click Enable LDAP Authentication.
   - To proceed using the wizard, follow the prompts in the page.
   - To enter all settings in one page without validations, click the Expert Mode link. Expert Mode is intended for expert LDAP users who are very familiar with the settings. See ***Configuring LDAP Authentication Settings*** (on page 28).
3. Type the IP address or hostname of your LDAP server.
4. Click Check. dcTrack verifies that it can find an LDAP server at the address.
5. Select the network port used by the LDAP server:
   - Port 389 is the standard, unencrypted LDAP communication port.
   - Port 636 is the standard, SSL-encrypted LDAP communication port.
   - If your LDAP server uses a custom port number select Custom Port Number and type the number in the provided field.

     Then select whether the server uses TLS Encryption, SSL Encryption or No Encryption.
6. Click Check. dcTrack verifies that it can communicate with the server over the specified port.
7. If dcTrack can connect successfully with these settings, click Continue, to proceed to the next step.

Configuring LDAP Authentication Settings

SASL is not supported.

To configure LDAP authentication in expert mode:

1. In the Settings tab, click Authentication Source.
2. Click Enable LDAP Authentication.
3. Complete the fields with your LDAP information.
   - LDAP Server: Enter the IP address or hostname.
   - LDAP Port: Enter the port number.

- Port 389 is the standard, unencrypted LDAP communication port.
- Port 636 is the standard, SSL-encrypted LDAP communication port.

- Transport Security: Select Unencrypted, SSL Encryption, or TLS Encryption.

4. Authenticate via Search: Leave this checkbox selected to use searching. This is the recommended setting.

Deselect the Authenticate via Search checkbox to use Distinguished Name Authentication. Enter the prefix and suffix that will resolve to a valid distinguished name when combined with the user name.

For example: `DN == ${prefix}${username}${suffix}`

- Base DN: The base distinguished name (DN) is the top level of the LDAP directory tree. It indicates where in the LDAP directory to begin searching for user credentials.
  - For example: cn=Users,dc=raritan,dc=com.
- Bind DN
- Binding Credentials: Enter the credentials to access the LDAP server.
- Confirm: Re-enter the credentials to access the LDAP server.
- User ID Attribute
- User Object Class
- Search Scope: Select One Level to search only the defined Base DN. Select Subtree to search the defined Base DN and all subtrees.
- Additional Object Filters

5. Click Save.

To test the LDAP settings:

1. In the Settings tab, click User Accounts.
2. Enter a username and password of a user that has an authorized account in the LDAP server you configured. Click Add and then click Test.

Note: LDAP must be enabled in order to test.

Configuring LDAP: Search and Authentication

The LDAP server contains a directory of users. This step tells dcTrack where to search for users, and how dcTrack authenticates (or Binds) those users with the LDAP server.

1. In section 1, type the base DN in the Base DN field. The base distinguished name (DN) is the top level of the LDAP directory tree. It indicates where in the LDAP directory you want to begin searching for user credentials.

   For example: `cn=Users,dc=raritan,dc=com`.

2. Click Check.
3. The options that appear in section 2 depend on the base DN entered.
   a. If your LDAP server uses anonymous binding, select Searching using anonymous binding.
   b. If your LDAP server uses a Bind DN and password combination, select Search using the following bind DN and password. Then type the bind DN and password in the provided fields.
   c. If you bind manually, select Enter the LDAP user parameters manually.
4. Click Check.
5. The user parameter options in section 3 depend on the choices made in section 2.
   a. If you chose to bind manually, type the user attribute prefix in the field provided.
   b. Otherwise:
      - Select the user ID attribute used by the LDAP server. uid is generally used by Microsoft Active Directory servers, cn by other LDAP servers. You can also specify a custom user ID attribute.
      - Select a user object class to filter by. You can choose between posixAccount, netOrgPerson, a value from the LDAP server, or a custom value. You can also choose "Do not filter by object class".
      - Select the scope of the user credential search. Choose whether to search the entire subtree or just one level. If you are unsure, you can leave this set to subtree.
      - Type any additional object filters in the field provided.
6. Click Check.

7. A list of LDAP users found using the configured parameters are displayed in section 4. Review the list. If the correct users are present, click Continue. If they are not, adjust the settings and try again.

   Note: If you chose to bind manually, no list of users can be displayed.

8. Click continue.

Configuring LDAP: Authorizing LDAP Users

Before LDAP users can connect to dcTrack, they must be authorized and given a dcTrack role.

To authorize LDAP users:

1. Type an LDAP Username string in the provided field. This user name should come from the list provided in the previous page.

   For example: `uid=ben,ou=People,dc=company,dc=com`

2. Select whether this user should be an Administrator.
3. Click Add.
4. Repeat to add more users.
5. When you are done creating the list of users, click Continue.

Configuring LDAP: Confirmation

The final step of the LDAP wizard is to enable LDAP access.

You can click the links for Connectivity, Search Parameters and User Accounts to make changes to any of the previous steps.

To proceed, click Enable LDAP Authentication. Once enabled, all non-admin users must have an authorized account on the LDAP server to connect to dcTrack.

Disabling LDAP Authentication

Disabling LDAP returns dcTrack to using the local authentication database. Users require an account on dcTrack to connect.

To disable LDAP authentication:

1. Click Settings.
2. Click Local User Authentication.
3. Click Enable Local Authentication.

Appliance Administration

Configuring Proxy Connections to dcTrack

If network restrictions prevent some users from connecting directly to dcTrack, they may need access through a proxy server that is authorized to make the connection. Check your firewall and security settings to ensure that communications between the proxy server and dcTrack is allowed.

To configure proxy connections to dcTrack:

1. On the Settings tab under Appliance Administration, click Proxy Configuration.
2. Select the web protocol the proxy server will be communicating over, HTTP or HTTPS.
3. Enter the IP address of the proxy server in the Proxy Host field. dcTrack will only accept proxy communication from this address.
4. Enter the communications port the proxy server will use in the Proxy Port field.
5. If the proxy server is required to authenticate with dcTrack, select Yes in the Authentication Required field, and enter a Username and Password. These fields must use a valid dcTrack username and password combination.
6. Click Save.

Configuring Logging through Syslog

External Syslog servers can be used to record events occurring on dcTrack. Using a Syslog provides a separate external log of events.

To configure logging through Syslog:

1. Click the Settings Tab.
2. Click Syslog Destinations.
3. Type the IP address of a Syslog server in the Add Syslog Destination field. This must be in the form of a numeric address.
4. Click Add. The server appears on the list of Current Syslog Destinations.

All servers listed under Current Syslog Destinations record events on dcTrack. Recorded events include new users, configuration changes, and failed login attempts. To stop a server from recording events, click Remove next to its entry on the list.

Accessing Audit Logs

dcTrack Management Client audit logs can be viewed in a browser, or exported to a file for viewing or storage.

Warning: Audit logs are automatically deleted from the system after 3 calendar months. If you need to maintain a complete audit trail, export logs regularly and store the files outside dcTrack.

To access audit logs:

1. In the Settings tab, click Audit Log in the Appliance Administration section.
2. The Audit Log Entries page opens.

To export audit logs to a text file:

1. In the Settings tab, click Audit Log in the Appliance Administration section.
2. Click the Download Audit Logs link. All audit log entries are exported to a text file.
3. Save the file.

Configuring NTP Server Settings

The Configure Time Servers table lists the NTP servers dcTrack contacts to get date and time information. NTP must be enabled first.

dcTrack attempts to retrieve the date and time from the first server on the list. If this attempt fails, it proceeds down the list and attempts to contact the second server, then the third, and so on.

To enable NTP and configure NTP servers:

1. On the Settings tab, click Time Settings.
2. Select the Enable NTP checkbox then click Save.
3. Click Manage Time Servers to configure settings for the NTP servers.
4. Click Add.
5. Type the time server's IP address in the Time Server field.
6. Click Save Changes.

To edit NTP server settings:

1. Select the server in the table and click Edit.
2. Type the time server's IP address in the Time Server field

3. Click Save Changes.

To remove an NTP server:

1. Select the server in the table.
2. Click Remove.
3. Click Yes in the confirmation message.

Configuring the System Clock Manually

To configure the system clock manually:

1. In the Settings tab, click Time Settings.
2. Select the Time Zone dcTrack resides in from the Time Zone drop-down list.
3. Select the date and time using the tools in the "Set time manually" fields. The time is set in a 24-hour HH:MM:SS format.

   For example: `3:42:33 PM on October 12, 2010` in 24-hour format is `2010/10/12 15:42:33`
4. Click Save.

Security and Encryption

Installing an HTTPS Certificate

A PEM file upload is required to replace the current certificate and private key. The PEM file needs to contain both an RSA private key and an X509 certificate.

Note: dcTrack does not provide a Certificate Signing Request (CSR). OpenSSL or any other utility can be used to generate CSR. dcTrack does not use encrypted private keys. You must remove the password from the Private key before it can be used. To remove the encryption from the key, issue a command like: "openssl rsa -in server.key -out server2.key". Use "server2.key" when using openSSL utility.

It is not required to provide root certificate of CA signing dcTrack certificate signing request (CSR).

Step 1: Generate a private key

This example procedure is for generating a private key using OpenSSL on a Linux server.

1. This command creates an RSA key with Triple DES 1024 byte encryption.

   ```
   openssl genrsa -des3 -out server.key 1024
   ```

2. Remember the key password from this command.
3. Generate a Certificate Signing Request. Be prepared to complete the following information:
   - private key password
   - two character country code
   - full state or province name
   - city name
   - company name
   - organizational unit or leave it blank
   - servers common name or fully qualified domain name
   - admin email address
   - other attributes can be left blank
4. Create the request.

   ```
   openssl req -new -key server.key -out server.csr
   ```
5. Display the CSR request.

   ```
   cat server.csr
   ```
6. Copy the CSR request and send it to the certificate authority to be signed. Make sure to copy everything between the first "-----" and the last "-----".
7. Submit CSR to certificate authority and receive signed X.509 certificate.
8. Modify the server key to remove the password

   ```
   cp server.key server.key.secure
   openssl rsa -in server.key.secure -out server.key
   ```

   Warning: The server.key file must be kept private and secure. If this key file is compromised, the certificate should be removed and then reissued.
9. Create PEM file.
   - The PEM file should contain both the RSA private key without password and the X.509 certificate.
   - Concatenate the unprotected private key to the signed X.509 certificate file from the top level certificate authority.
   - Use this file in the upload in Step 2.

Step 2: Upload the PEM file to dcTrack:

1. In the Settings tab, click HTTPS Certificate in the Security and Encryption section.

2. Click Browse and select the PEM file.
3. Click Upload.

Restricting Web and Shell Access Based on IP Address

To increase security, dcTrack can be configured to restrict web interface and SSH access by IP address. When trusted hosts are specified, dcTrack blocks attempts to connect from addresses not specified. When no hosts are specified, ports 22, 80, 443, 5432 are open to all hosts.

To restrict web and shell access:

1. In the Settings tab, click IP based Access Control. The IP Based Access Control page opens.
2. Identify the hosts to allow access to in the Trusted Hosts fields.

   You can enter an IP address, or a subnet using CIDR notation such as 192.168.45.0/24.
3. For each address, select how it is permitted to access dcTrack.
   - Select the Enable SSH to allow SSH access checkbox.
   - Select the Enable HTTP/HTTPS checkbox to enable access through the web interface.
   - Select Enable ODBC to allow third party access.
4. Click Save.

Changing the Login Page Message

You can change the default message that displays on the login page to a customized message for all dcTrack users.

To change the login page message:

1. In the Settings tab, click Login Message.
2. Enter the heading and body of the message in the fields. Standard HTML tags such as <br> and are supported.
3. Click Save.

Change Web User Session Timeouts

You can set dcTrack to log out any web users who have been inactive for a certain period of time.

To change web user session timeouts:

1. In the Settings tab, click Web User Session Timeout.

2. Select a time from the "Log users out after" list. The time indicates how long users can remain idle on the dcTrack web interface before being logged out. Select Never to disable this feature.
3. Click Save.

Chapter 4 dcTrack Windows Client

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dcTrack Windows Client Interface

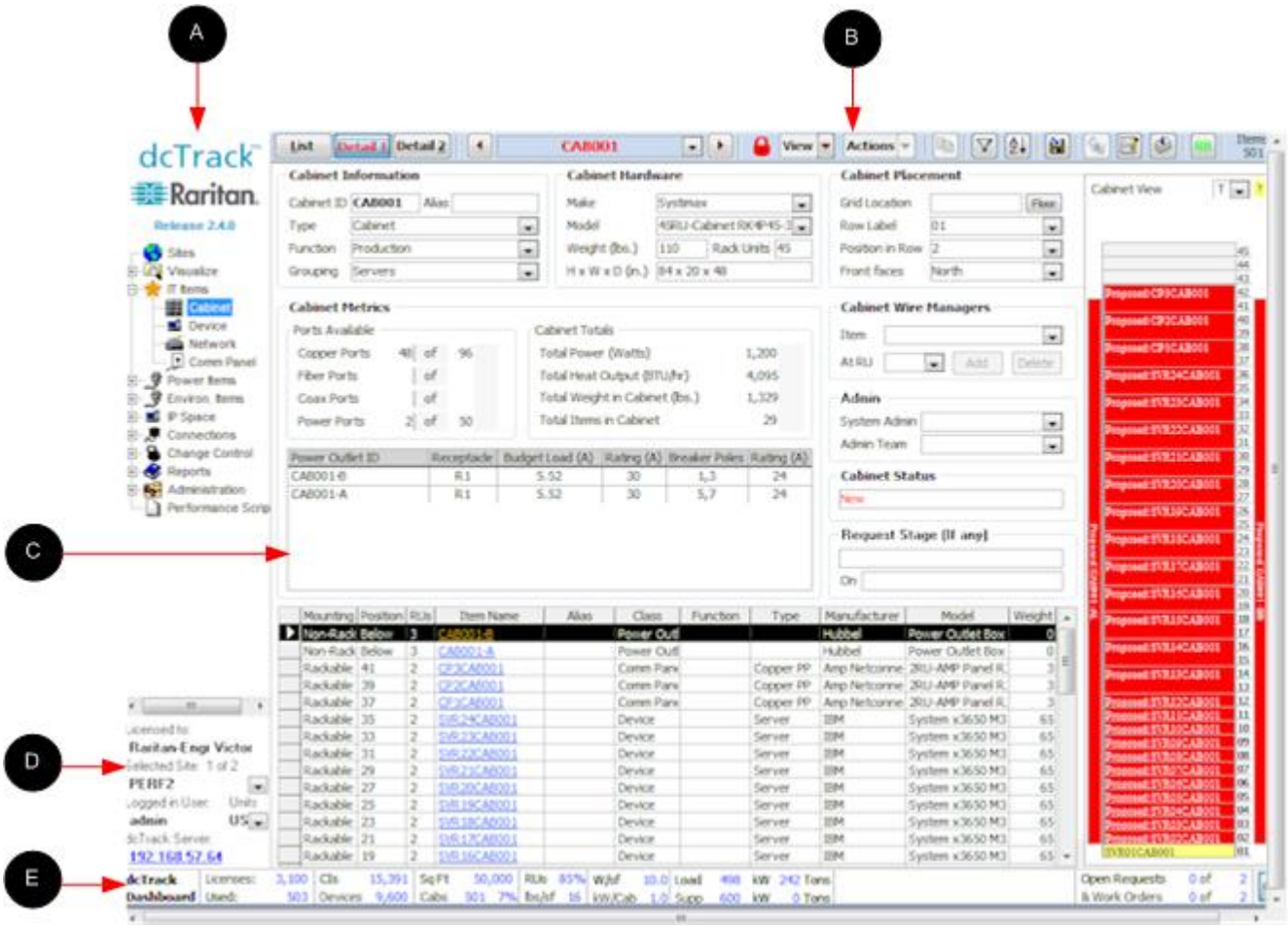
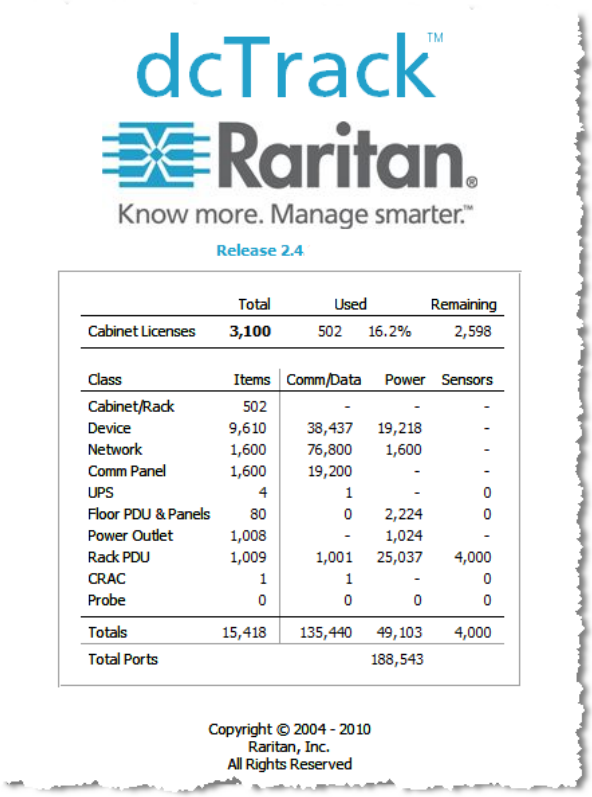


Image key	
A	Explorer menu
B	***Toolbars*** (on page 41)
C	***Pages*** (on page 45)
D	dcTrack information
E	***Dashboard*** (on page 43)

Windows Client Splash Screen

This page is displayed when the application is initially launched. It can also be accessed by clicking on 'Release 2.x' located below the dcTrack logo at the top of the Explorer menu. A quick summary of the cabinet licenses are provided on this page.

Note: You can also view dcTrack license information in the Management Client. See **Licensing** *(on page 16).*

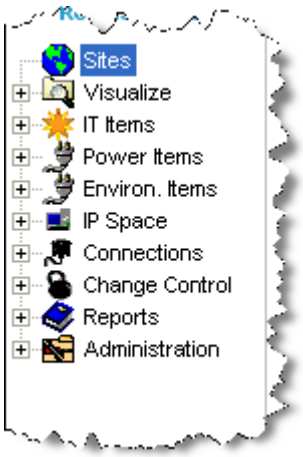


	Total	Used		Remaining
Cabinet Licenses	**3,100**	502	16.2%	2,598

Class	Items	Comm/Data	Power	Sensors
Cabinet/Rack	502	-	-	-
Device	9,610	38,437	19,218	-
Network	1,600	76,800	1,600	-
Comm Panel	1,600	19,200	-	-
UPS	4	1	-	0
Floor PDU & Panels	80	0	2,224	0
Power Outlet	1,008	-	1,024	-
Rack PDU	1,009	1,001	25,037	4,000
CRAC	1	1	-	0
Probe	0	0	0	0
Totals	15,418	135,440	49,103	4,000
Total Ports			188,543	

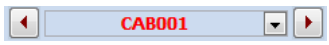
Explorer Menu

This menu is always visible in the left margin of the dcTrack application. It is used to navigate through the various pages of the application.



Toolbars

The toolbars that are used in dcTrack vary depending on the page you are working in. Following is an overview the icons that make up most toolbars.

Icon	Description
	The page view icons switch the item pages between List, Detail 1, and Detail 2 pages. The List screen contains all items in the current item class based on the selection in the Explorer menu. The Detail 1 page contains information specific to the selected item. The information for each item will vary depending on its item class. The Detail 2 page contains additional fields about the selected item.
	The Record Locator shows the currently selected item. You are able to type the name of an item into the Record Locator to find the item or use it as a drop-down to select the item from a list. Clicking on an item name will open it to its Detail 1 page. The Record Locator drop-down is always

Icon	Description
	sorted by item name regardless of the sort order selected.
	The Page Mode drop-down switches the item page between View, Edit and Add. View screen mode allows you to view data only. While in this mode, the Permission Lock icon is red and in the locked position . Provided you have the appropriate permissions, you can switch to Edit and Add page modes. When in either of these modes, the Permission Lock icon turns green and to the unlocked position .
	The Actions drop-down provides you with various actions depending on the specific item page and page mode you are working with. Generally, the Actions drop-down is where requests are initiated and processed.
	The Clone icon triggers the Clone Items pop-up. This icon is only available when the screen mode is switched to Add page mode.
	The Item Status Filter icon displays the Item Status list that can be used to filter the records by status. See ***Connection and Item Statuses*** (on page 49) for more detail.
	The Sort icon triggers the Select Sort Order dialog. This dialog allows you to select multiple field names from the Available Fields list. Each field can be sorted in ascending or descending sort order prior to adding it to the Field Sort Order sequential list.
	The Save icon saves changes to pages and records. In many cases, the use of this icon is optional since the record is automatically saved if the backward ƒ and forward „ icons are pressed, or if a new record or a new screen are selected.
	The Remote Desktop icon displays a list Microsoft Remote Desktop or Telnet sessions that can be launched based on the current items IP or HTTP addresses.

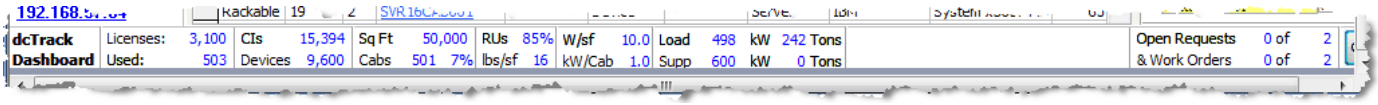
Icon	Description
	The Audit Trail icon opens the Automatic Audit Trail Log dialog.
	The Pending Requests icon opens a List of Items with Pending Request dialog.
	The Request Bypass icon opens a dialog that allows you to enable (Yes) or disable (No) the request bypass feature.
	The Items Counter displays the total number of items in the currently selected item class.

dcTrack Information

Relevant dcTrack database information is displayed in this area including licensee name, the currently selected data center site, your login name, the current user measurement units, and dcTrack server. Click on the dcTrack Server link to access the Management Client log in page.

Dashboard

The dashboard is a two-line text band that is always visible at the bottom of the dcTrack application. It provides high level metrics about the data center.

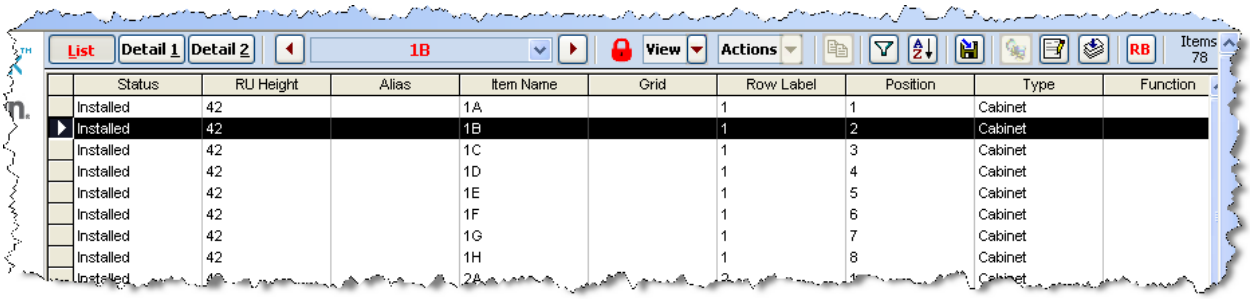


Views, Pages and Modes

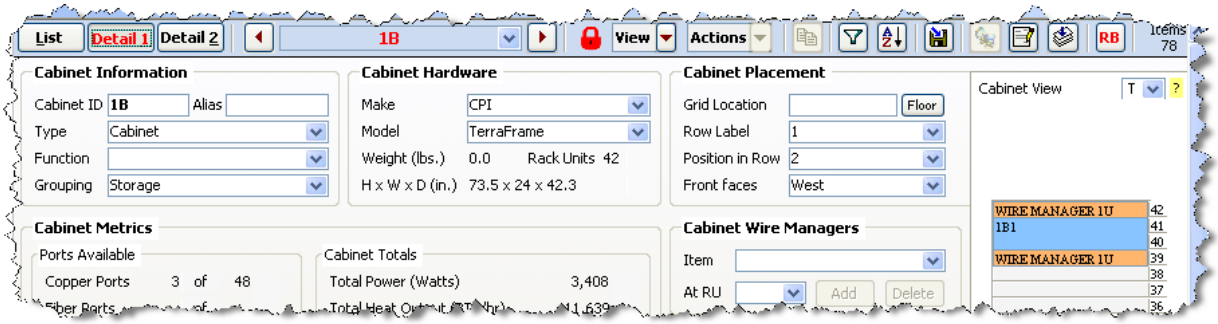
List View and Detail View

Items in dcTrack can be viewed in a list or the item details can be viewed on Detail 1 and Detail 2 pages.

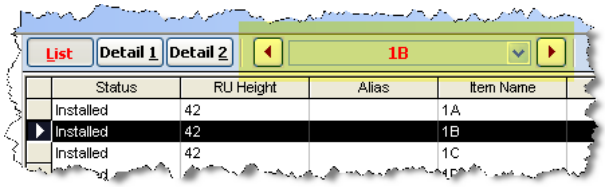
List view displays the item information in a spreadsheet style format.



To view details, select an item from a list and click either the Detail 1 or Detail 2 icon, or double-click on the item.



You can navigate between items in a either list or detail view using the Next and Previous Item navigation arrows. Alternatively, you can use keyboard navigation such as direction arrow keys, page up, page down, and so on. To locate a specific item, you can enter it into the Record Locator drop-down or scroll through the list.



Pages

When an Item or Connection page is first opened, it displays a list of items or connections. This is called the List page. You can view more information about a particular item or connection in the List page by double-clicking it, or selecting it and then clicking the Detail 1 or Detail 2 icon.

Depending on your access level, certain text boxes and drop-downs are disabled or locked. These fields are outlined in red. Some fields are locked even to the Gatekeeper in order to protect data integrity since in some instances changing data in one field could impact related data. For example, changing an item's model after it has been approved and installed is not allowed.

On the Detail pages, some of the data may be represented in a table view (that is, in columns and rows). The columns are field headings and the rows are the data records. Each row has a row marker used to select the entire row. Double-clicking or right-clicking the row marker usually results in an action. A right arrow in the row marker indicates that a particular record (or row) is the currently selected one. An asterisk symbol in the row marker indicates that this row can be used for entry of a new record.

dcTrack Terminology

Sites

A data center room with its own AutoCAD® DWG drawing file.

Items

Any asset being managed in the data center is called an item. In the dcTrack Explorer menu, the items are broken into three groups: IT items, power items, and environmental (environ.) items. Then each group is broken further into the item class. Each item can have one or more power port and/or communication port. See ***Ports*** (on page 48).

IT Items

Any IT asset that is being managed in the data center is called an IT item. Items are grouped into six classes called item classes, which are as follows:

Item	Description
Cabinet	A cabinet item is the structure that contains other items such as devices, network equipment, comm outlets and/or rack PDUs. A cabinet can be an enclosed cabinet or an open bay

Item	Description
	rack. Cabinets and racks have mounting screw holes that are spaced apart according to an EIA industry standard. This spacing is known as a rack unit (RU), which represents a mounting height of 1.75.”
Device	A device item is any computer system and its peripherals that are placed into a cabinet in the data center. There are several device types such as servers, appliances, disks, storage, tape drives, KVMs, etc.
Network	A network item is any network equipment that provides network connectivity to devices. Network equipment typically has many more ports than devices. Furthermore, multiple network items can be grouped and given a group name and a nickname.
Comm panel	A comm panel (communication panel) item is used to terminate both ends of a grouping of a certain number of fixed structured data cables installed in the data center. Typically, one end of the grouping of data cables resides in or near a device cabinet while the other end resides in or near a network cabinet. Comm panels can take a variety of types and form factors such as Category 5e/6/6A RJ45 patch panels, 110-type punch down blocks, fiber patch panels, etc. Collectively, the comm panels, data cables, and patch cords are referred to as the structured cable plant.

Power Items

Item	Description
UPS	An UPS (Uninterruptable Power Supply) item is an electrical system that provides continuous and uninterrupted power by switching very quickly to a local power source in the event the electrical utility feed is interrupted. The local power source is composed of battery cells that are charged by the electrical utility feed during normal conditions. The size and quantity of batteries determine the duration of the local power source. Typically, a UPS feeds PDUs downstream in the power chain.
PDU	A PDU (Power Distribution Unit) item is an electrical system unit that typically houses a step down

Item	Description
	transformer and circuit breaker panel boards. In some cases, the electrical panel boards are housed outside the PDU in remote power panel (RPP) cabinets distributed throughout the data center raised floor. A panel board contains circuit breaker positions called poles. An alternate method of electrical distribution is an electrical busway system whereby the PDU main circuit breakers feed the busway instead of the internal panel boards or RPPs. In this system, the circuit breakers reside on the busway modules that house the electrical outlets. Typically a PDU is fed by one or more UPS systems. *Note: Do not confuse a rack PDU item with a PDU item. Rack PDU items are essentially a power strip and PDU items are an electrical system unit that typically houses a step down transformer and circuit breaker panel boards.*
Outlet	An outlet item is the housing unit that contains one or more electrical receptacles of varying types. The electrical receptacles are in this case ports. Each outlet is fed from a circuit breaker.
Rack PDU	A rack PDU item is a specialized power strip that is used to provide additional electrical receptacles for a particular electrical outlet. The rack PDU can be mounted horizontally or vertically in the cabinet. Some rack PDUs may be “metered” whereby they include an internal electronic measurement unit to measure the current draw at the receptacle or aggregate level of the rack PDU, and report this reading on an LED display internal to the rack PDU. Other rack PDUs may be “intelligent” whereby they can report the current draw and other electrical measurements at the receptacle level or at the aggregate level of the rack PDU via SNMP to an IP network device. Additionally, some of the “intelligent” rack PDUs can have temperature and humidity probes.

Environmental Items

Item	Description
CRAC	A CRAC (Computer Room Air Conditioning) item is

Item	Description
	usually a floor-standing air conditioning unit that provides cold and, usually, pressurized air under the raised floor to cool the heat dissipative data center equipment.
Probe	A probe item is equipment that accepts one or more signals from a temperature and/or humidity sensor. The probe reports the temperature and humidity values via SNMP to dcTrack.

Ports

With the exception of cabinets, all items can be configured with ports. Ports represent all the connectors on an item that may be connected to other ports. Ports can be added or deleted by any user who has edit access to that item. Ports that are already connected may not be deleted until they are disconnected. Once a port is created, only the port name may be edited.

Following are the port types:

Item	Description
Comm/data port	Any port on an item used for voice or data communications is a comm port. A port is defined with a name, connector, communications protocol, transmission speed, address and comments. *Note: The terms comm and data ports are used interchangeably in the help but mean the same thing.*
Virtual port	Any communications port on a virtual machine. These ports are defined in the same way as comm ports.
Power port	Any port on an item used to provide power to the item. Each power supply in a device or in a network equipment item is represented in dcTrack as a power port. Each receptacle in a power outlet or rack PDU is represented as a power port.
Breaker panel pole	A PDU, RPP or electrical busway module contains panel boards. The maximum number of poles a panel can have is 42. Each pole is numbered from 1 to 42. A panel is laid out such that odd poles are on the left and even poles are on the right. There are 3 types of circuit breakers: 1-, 2-, or 3-pole

Item	Description
	breakers. As the name implies, a 2-pole breaker requires two pole positions and a 3-pole breaker requires three positions.
Sensor port	Sensor ports are temperature and humidity sensors that may be part of an "intelligent" rack PDU, PDU, UPS, CRAC or probe item.

Connections

Connections can be made between any two ports defined in dcTrack as long as they do not violate connection rules. The two ports creating a connection are referred to as end points. An end point is the item port involved in a connection. The two end points are given the label End Point A and End Point B. In a diagram, End Point A is always represented on the left and End Point B on the right.

When using the cable plant (comm outlets), a connection can have more than two end points. Unlike other item ports, a comm outlet port is always represented as two end points since a comm outlet port is actually a cable with two ends and each end will connect to two different item ports.

A connection is built by selecting the item and port for end point A, then the item and port for end point B. A comm outlet is always selected under end point B. When selected, another end point A is added to the connection representing the far-end of the cable, which will connect to another item port as an end point B.

Connection and Item Statuses

Each item and connection is marked with a status. The status identifies the state the item or the connection is in. The status is managed automatically by dcTrack based on the action taken last on an item or a connection. The following are the dcTrack status definitions:

Item	Description
New	Item or connection that has been added but has not yet been approved. A request may or may not have been issued.
Approved/Not Installed	Item or connection that has been approved but has not yet been installed. A work order may or may not have been issued.
Installed	Item or connection that is installed and is in use.
Inactive	Item that is installed but is not in use.

Item	Description
Discarded	An item that has been removed from inventory and disposed of. This is similar to marking an item for deletion. This status does not apply to connections. When connections are removed they are deleted from dcTrack and therefore will never exist in a discarded state.
Off-Site	An item that has been removed from the data center to an off-site location such as a client's site. This status is different than Discarded in that the item's position in a cabinet and its connections remain in place physically in the data center as well as in dcTrack since this item is expected to be returned and hence its resources are reserved.
To Be Removed	When a connection is being edited, a request is generated to delete the existing connection and create a new connection. Therefore, the status of the existing connection is changed to “To Be Removed” pending its approval.
Deleted	When an item in the Discarded status is deleted, a status of Deleted is applied to it. The item is no longer visible to the user but it remains in dcTrack. Only the Gatekeeper can see this item from the Administration > Items & Ports page. Cabinets with a Deleted status do not count towards the used licenses.

Sites

Tasks for Creating a Site for the First Time in dcTrack

Following are the steps for entering data into dcTrack for the first time. This information takes into account dependencies and relationships between various data center infrastructure items.

Step	Task	Description
1	Create administration lists	If this is the first site you are creating in dcTrack, setup the contents of the drop-downs used throughout the application. See ***Lists*** (on page 153).
2	Create users	Enter the Gatekeeper user account information. This account is created automatically when you logged in to dcTrack for the first time. Once this is

Step	Task	Description
		done, setup all other users of dcTrack. The majority of user maintenance is done in the Management Client but some is also done in the Windows® Client. See ***User Management - Management Client*** (on page 21) and ***User Management - Windows Client*** (on page 158).
3	Create sites	Add a new site and link it to an AutoCAD® drawing of the data center. See ***Creating a Site*** (on page 53).
4	Visualize the floor map	Define the entire data center view. Create cabinets, PDUs, CRAC units and UPS units for the drawing using the Sync dcTrack with AutoCAD Drawing icon in the Visualize page toolbar. See ***Visualization*** (on page 55).
5	Add cabinets	For each of the cabinets that was created from the AutoCAD drawing, fill in the following information: • Make and Model - determines the number of rack units in the cabinet. No items can be placed in a cabinet without this information. • Row Label - without this information visualize elevations cannot be viewed by row. • Position in Row - without this the visualize elevations cannot be displayed in the correct order. • Front Faces - without this, the visualize elevations cannot be viewed in the correct order. The cabinet orientation and drawing north fields on the Sites page must be completed for this functionality. • Cabinet Grouping - without this the visualize elevations cannot be viewed by group. Add all the wire managers that may be installed in each cabinet.
6	Add comm panels	Create all comm panels and comm panel ports. Remember: When creating comm panel

Step	Task	Description
		ports for one panel, the far end panel (the panel at which the cables terminate) is created automatically if they are not already created. If the far end panels are created automatically, go to those panels and provide the correct make and model information if it is different than the near end panel.
7	Add UPS units	Create all UPS units in the data center. Next, arrange them in UPS banks and assign the UPS bank redundancy. If you just have one UPS, you still need to create a bank of redundancy *N* and assign it to the UPS.
8	Add PDUs	Create all the PDUs that connect to each UPS bank and the PDU panel(s) in each PDU. *Note: Panels may be remote, as with RPPs, or they may be busways.* Next, populate the panels with breakers as needed.
9	Add outlets	Create all outlets and assign the outlets a make and model. For this specific item you could use a generic make and model definition since it is simply the outlet box. Assign the outlet to a PDU panel and to a breaker in that panel. Create receptacles in each outlet (ports). In the case of busway systems, the breakers are not created in the PDU step above. They are created together with the outlet.
10	Add IP subnets	Create all subnets and assign them names made up of the logical part and location part.

Once these steps are performed, you can define the data center infrastructure by adding items, ports and connections, and then assigning IP addresses. See ***IT, Power and Environmental Items*** (on page 82). dcTrack provides you with An Import wizard to import existing data center items from a spreadsheet into the application.

Creating a Site

This topic covers creating a site for the first time within dcTrack.

To add a site for the first time:

1. Click Sites to open the Sites page.
2. Click Add on the bottom of the Sites page.
3. Complete the Site Information section:
   a. Enter a Site Code and the Site Name for the site. The site code and site name appear in the Available Sites list once the site is added. **Required**
   b. If needed, select a type for the site, either main, regional, local or disaster recovery.
   c. Enter the square footage of the site. **Required**
   d. Enter the outer room dimensions, if needed. When you put your cursor in the Outer Room Dimensions field, example diagrams of rooms measured in length and width will be displayed.

   Tip: You can change the measurement units to either US or SI (metric) by clicking on the Units drop-down at the bottom of the left frame.

   e. Enter the data center heights, if needed. When you put your cursor in any one of the Data Center Heights fields, example diagrams of room heights will be displayed.
4. Complete the Site Address section:
   a. Select the country the site is located in. **Required**
   b. Enter the floor, street, city, state and postal code for the site, if needed.
5. Complete the Floor Map Drawing Options section:
   a. Select the appropriate Drawing North arrow that best reflects your floor map orientation. For example, select the down arrow if North is located in that direction.
   b. If a raised floor grid labeling system such as A1, A2 and so on is used in the data center, make the appropriate selection from the Grid Labeling drop-down.
6. Complete the Cabinet Row Orientation on Drawing section:

a. Make the appropriate selections to indicate the direction in which the cabinet position numbers increase.

The labels shown inside the depiction of the cabinets are cabinet IDs, they are not position numbers. The position number for each cabinet is entered on the IT Items Cabinet page. Position numbers are used to create a convention that allows dcTrack to track the relative position of a cabinet within a row.

7. Upload a of the site in the Site Picture section of the page:

   a. If needed, click Browse and select the picture. JPG, BMP, WMF and GIF formats are supported. Once added, the picture will be displayed in the box under the Site Picture field.

8. Upload a drawing of the site in the Site Drawing section of the page:

   a. If needed, click Browse and select the AutoCAD® DWG drawing file of the data center. See ***Setting Up an AutoCAD Drawing File for Use with dcTrack*** (on page 57) for more detail about setting up the AutoCAD drawing.

Note: AutoCAD 2010 and 2011 file formats are not supported by dcTrack.

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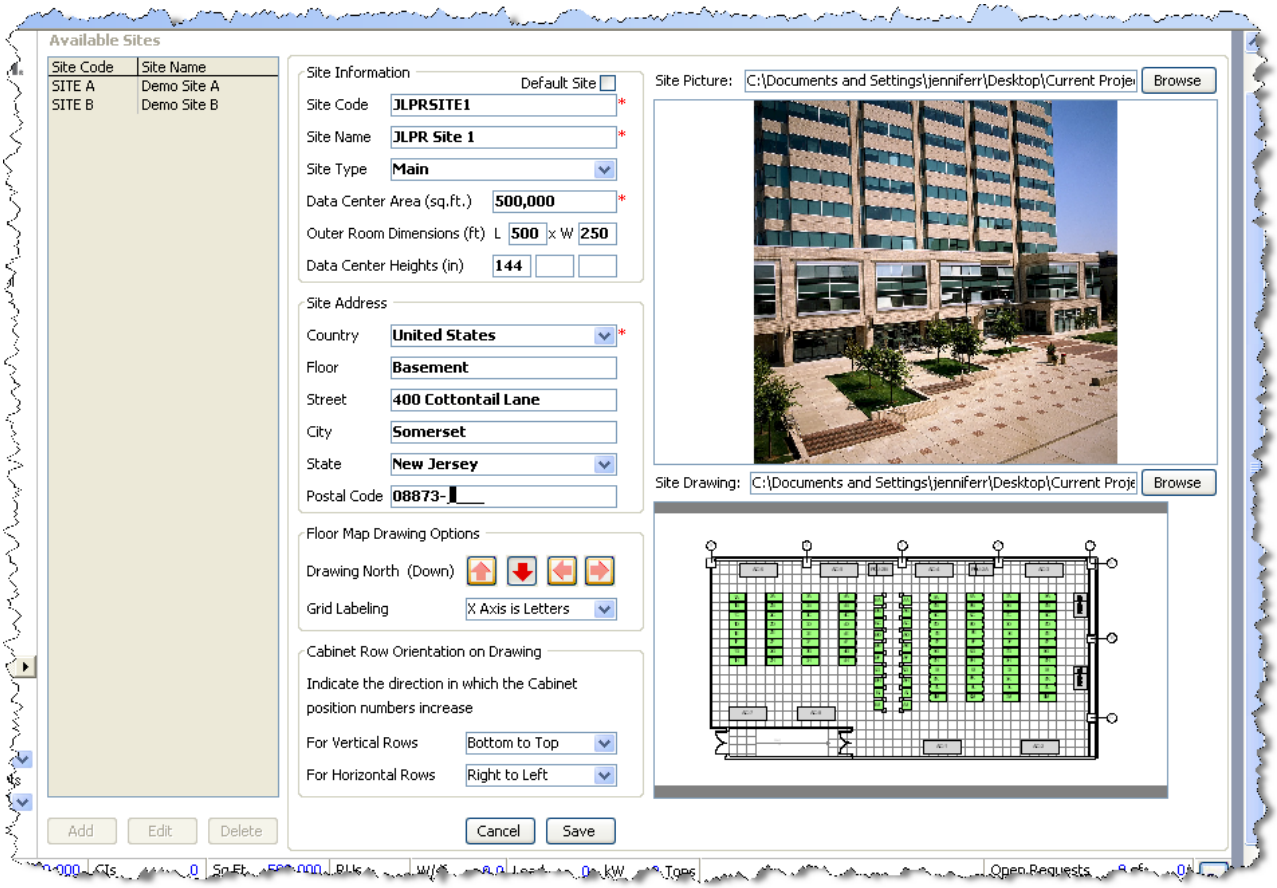
9. Click Save.



Visualization

Visualization provides you with a real-time, high-level graphical rendering of the data center floor plan and the contents of the data center. In dcTrack, the floor plan is displayed from an overhead (top) view.

Visualization includes:

- Accessing, viewing and managing cabinets via a floor plan of the data center
- Accessing, viewing and managing items, ports and connections
- Tracing ports
- Tracing item connections
- Searching for items
- Power path tracing

Floor Map

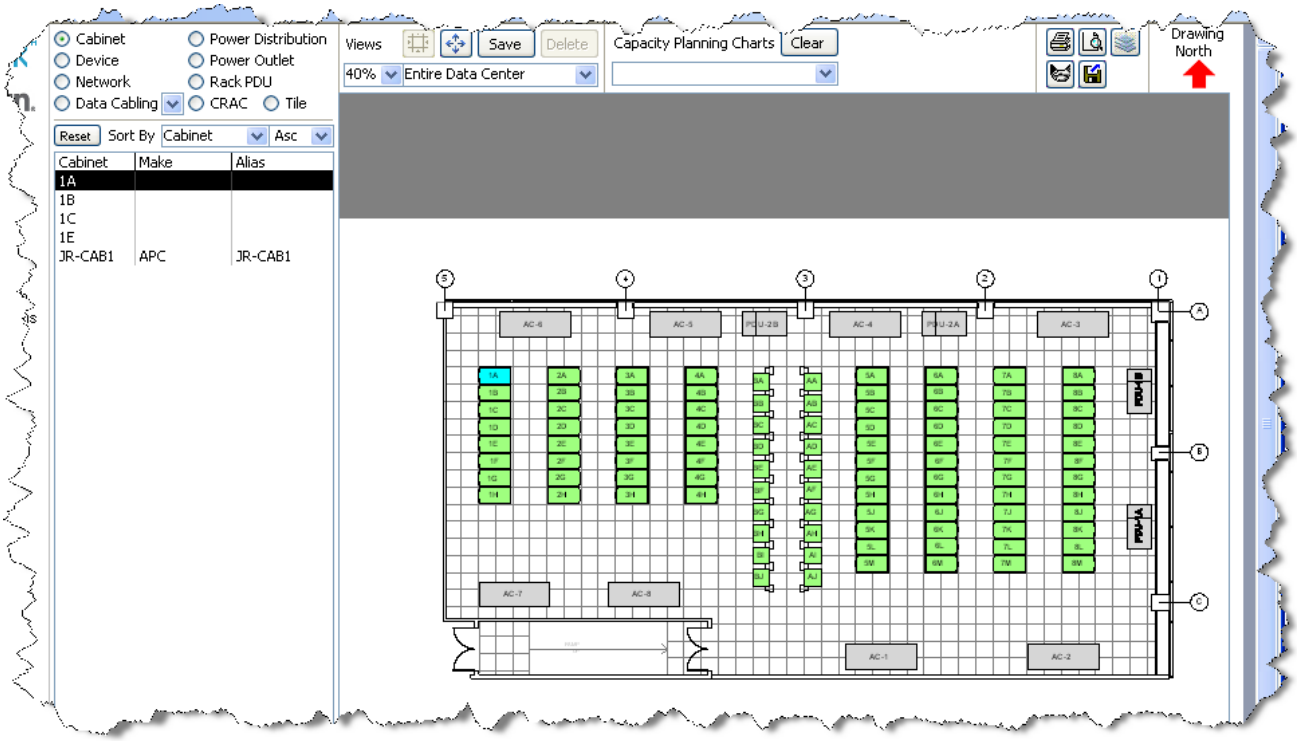
dcTrack allows you to link an existing drawing of a data center floor plan to a site. This drawing must be in AutoCAD® DWG file format (.dwg). Microsoft Visio is also supported but Visio drawings must be saved in AutoCAD DWG file format. See ***Visio Drawings*** (on page 65).

Note: AutoCAD 2010 and 2011 file formats are not supported by dcTrack.

You link a data center drawing to a site on the Sites page in dcTrack. Drawings can be linked to a site during the site creation process or after the site has been created. See ***Creating a Site*** (on page 53).

The drawing file is not imported into dcTrack after it has been linked to the site. It remains on the file server where it can be accessed and updated as needed. So, when the Floor Map page is opened, the latest version of the drawing is loaded and any changes made to the drawing are shown immediately.

When the floor map is loaded for the first time, the objects in the AutoCAD drawing can be linked with items in the dcTrack database. See ***Synchronizing AutoCAD Objects with dcTrack Items*** (on page 63). For example, you can link a cabinet in the AutoCAD drawing to a cabinet in the dcTrack database.



Raritan.

AutoCAD Drawings

Setting Up an AutoCAD Drawing File for Use with dcTrack

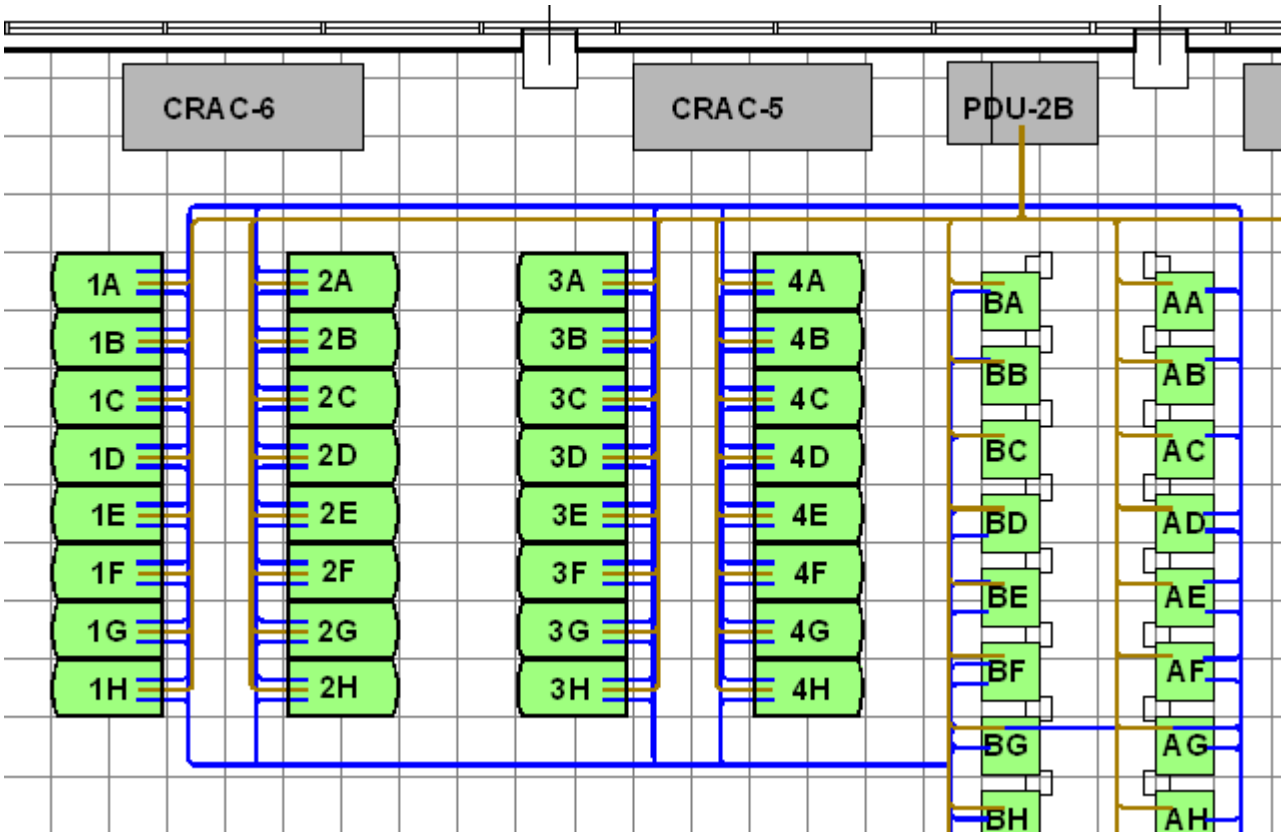
Mandatory Requirements

- A Solid Hatch object must drawn inside each rack, cabinet, PDU and CRAC unit.
- A text label (Standard Text or Multiline Text) must be created and placed inside every rack, cabinet, PDU and CRAC unit. This label must contain the name or ID of the object that will be viewed in dcTrack.
- All drawing objects must be in Model Space.
- Do not begin the name of any layer with the word "dcTrack" unless you are directed to do so.

Optional Feature Requirements

Cable Routes Option

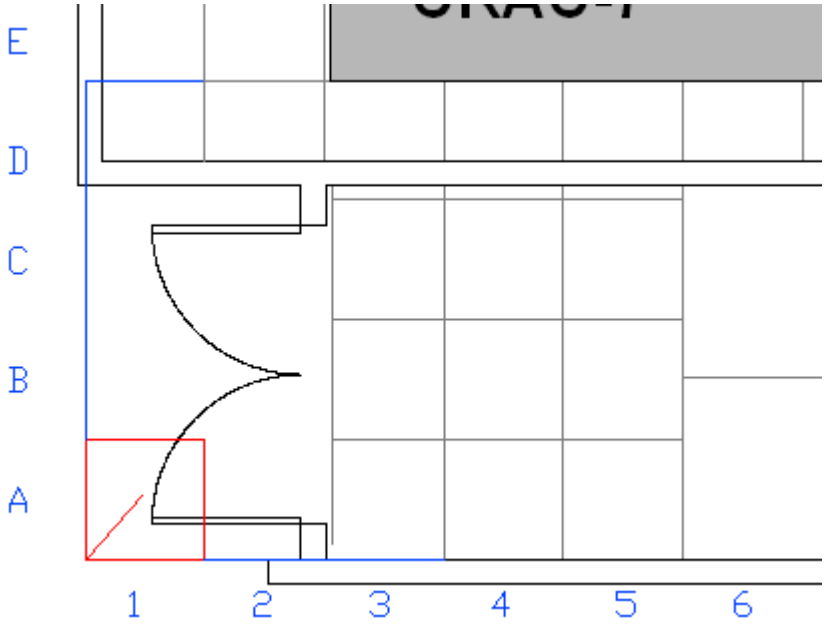
- Draw UTP cabling on a Layer called dcTrackCablingCopper.
- Draw fiber cabling on a Layer called dcTrackCablingFiber.
- Draw coax cabling on a Layer called dcTrackCablingCoax.
- Draw power cabling on a Layer called dcTrackCablingPower.
- Draw lines representing the cable routes using the Pline (Polyline) command. The Pline between two cabinets must be a continuous Pline object.
- Each end of the Pline must cross inside the cabinet Solid Hatch.
- Turn the above Layers off after creating the Layers and drawing the cable routes. Do not Freeze them.



Raised Floor Grid Labeling Option

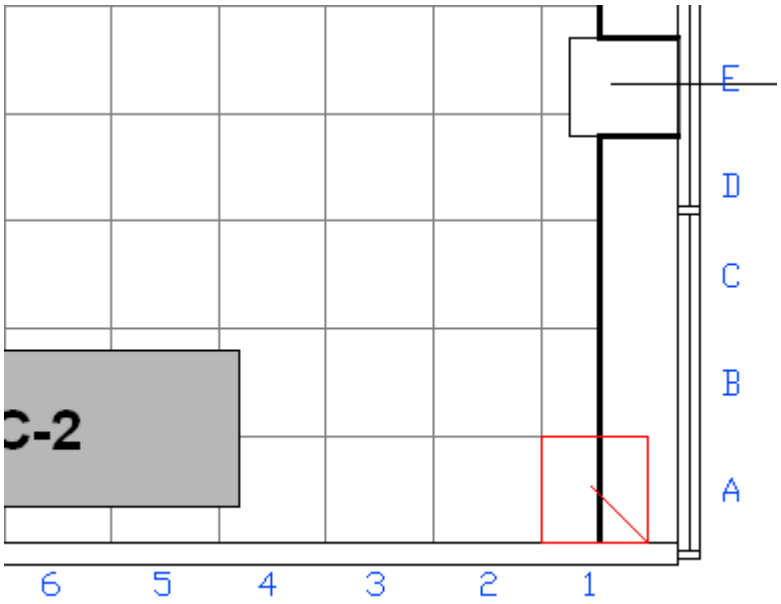
1. Draw a marker on a Layer called dcTrackGridMarker.

The figure shown here is an example of a grid marker starting at a location where the A1 tile doesn't exist. Note that the blue lines were temporarily drawn to represent the location of the A1 tile exactly. Note the corner and direction of the line inside.



2. Draw the marker using the Rectangle command matching the origin coordinate (A1) tile exactly. If the A1 tile doesn't exist because of the geometry of the room walls, use the temporary lines to extend the raised floor grid to where the A1 tile would have been and draw the square marker there. Delete the temporary lines.
3. Inside this square, draw a Line (don't use Pline) from the exact corner of the square to the approximate center. Choose the corner that represents the 0,0 coordinate. In other words, this line starts at the corner and points to the direction of increasing numbers and letters.
4. Do not draw any other objects on this Layer.
5. The Layer should be turned Off, however, do not Freeze it.

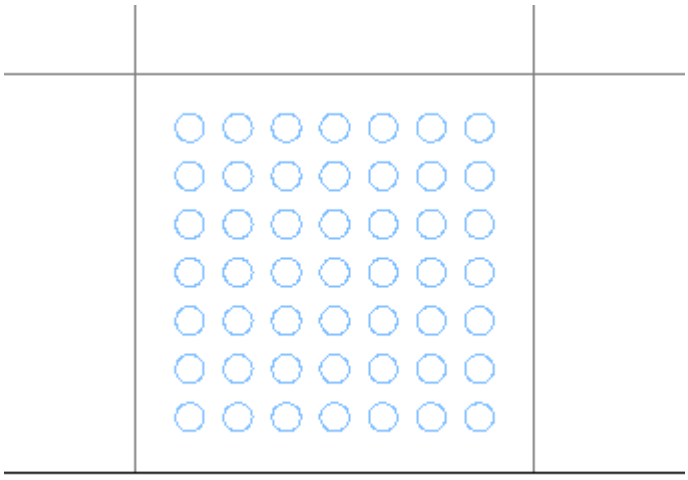
The figure below shows an example of a grid marker at the A1 tile which is not a full tile, but the marker must have the dimensions of a full tile. Note the corner and direction of the line inside.



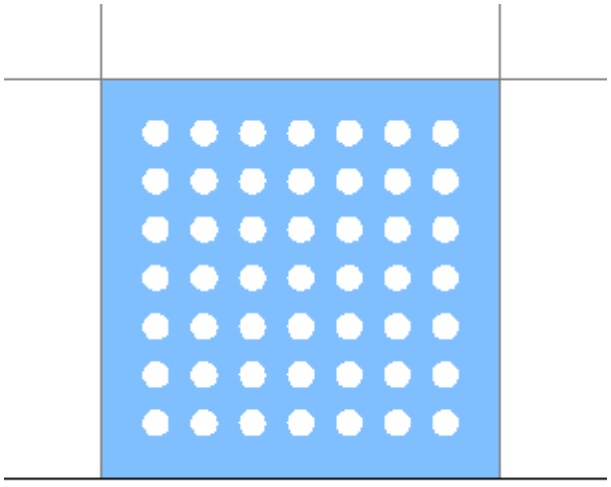
Perforated Tiles (PT) Option

1. Draw the Perforated Tiles (PT) on a Layer called dcTrackPerfTiles.
2. The PT is represented by drawing a Solid Hatch that is the size of one floor tile. You can make the PT look more realistic by showing the perforations in the Solid Hatch object. To do this:
   a. Before drawing the Solid Hatch, draw a grid of small Circles inside the square of the tile.

b. Next, draw the Solid Hatch. This keeps the Solid Hatch out of the interior of the Circles. Delete all the Circles.

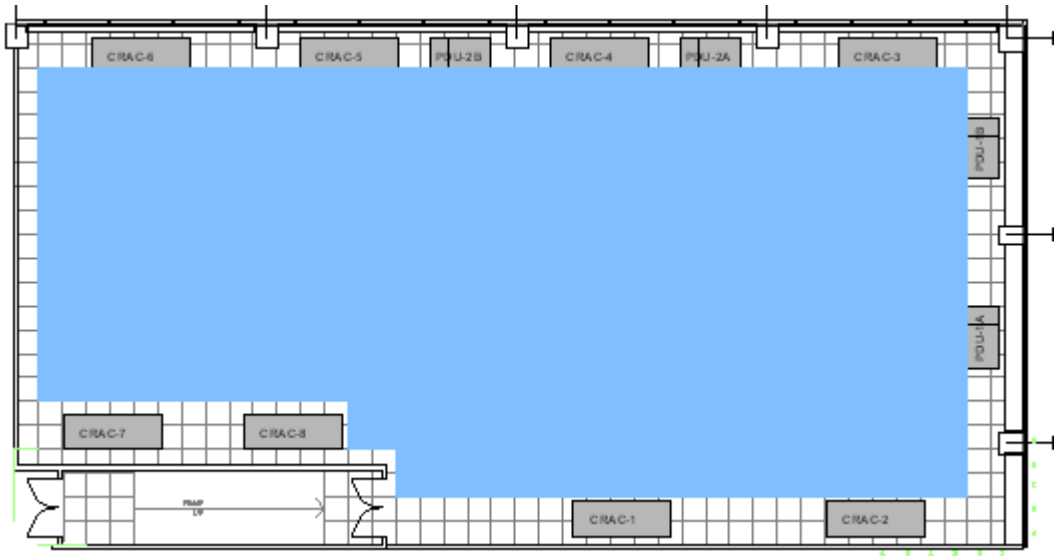


3. Use the PT Solid Hatch and copy it to every tile in the data center where a PT can be possibly installed. Use the Array command to accomplish the copying. Start with the PT Solid Hatch in the lower left most tile. Then provide the Array command with the number of rows and columns of PTs to be created. For correct array propagation, use the mouse with 'intersection snap' turned on so as to pick the offset points. The Layer should be turned Off but do not Freeze it.



4. Draw a grid of 7 x 7 circles using the Array command.
5. Draw two Lines from opposite corners in order to find the center point of the tile.

6. Move all circles so that the center of the center circle is at the intersection of the two Lines. Delete the two Lines.
7. Draw a Solid Hatch bound by the tile and the outside of all Circles. Delete all the Circles.
8. Use the Array command to copy the hatch object to all tiles in your data center.



9. Delete all extra PT hatch objects where a PT may never be installed such as under and to the sides of the PDU and CRAC units.

Good Practices

- The cabinet outline should be a single object. Use the Pline or the Rectangle commands to draw the cabinet outline.

  If a cabinet has a curved front that you want to show, use a single Pline to draw the cabinet starting at the center of the rear. Then, for the curved front, draw several shorter straight lines while varying the angle each time to achieve the curved look.
- Make the Pline width of the cabinet outline equal to 0.75” or 1”.
- Draw cabinet outlines, cabinet solid hatches and cabinet labels on separate Layers. This makes it much easier to make modifications and global changes in the future.
- A text label (Standard Text or Multiline Text) should be created to identify each row. The same label should be used in the Row Label field on the Cabinet page.
- Colors:
  - Use Color 81 for the cabinet Solid Hatch.
  - Use Color 254 for PDU and CRAC Solid Hatches.
  - Use Color 151 for PT Solid Hatches.

- Use text style Arial Bold and a text height of 9 inches. This text height assumes that the AutoCAD® drawing is drawn in a scale of 1:1.
- Use the Fillet command with a radius of 3 inches to round the edges of all the Plines representing the cable routes. This provides a cleaner look. This radius size assumes that the AutoCAD drawing is drawing in a scale of 1:1.
- If there is a title block in the AutoCAD drawing, place it in the Paper Space and create a Viewport to the Model Space. When you use the Advanced Print feature in dcTrack, dcTrack switches to the first Paper Space layout (if it exists) and print it, thus printing your floor map with a title block.

Synchronizing AutoCAD Objects with dcTrack Items

To link/synchronize AutoCAD® objects with dcTrack items:

1. Select Visualize > Floor Map to open the Floor Map page.
2. Click the AutoCAD Sync button . The Synch dcTrack with AutoCAD Drawing dialog opens.

   A blank space appears in the "In dcTrack" column of the "Objects found in AutoCAD Drawing" list if the objects are found in the AutoCAD drawing but are either not found in dcTrack or are in dcTrack with a matching label that is not linked to AutoCAD.

   Note: Not every floor-standing item has to have a link. For example, the UPS units may not be located within the data center raised floor room, so the UPS exists in dcTrack but will not have a link to the AutoCAD drawing.

   If the items already exists in dcTrack but have not been linked to the AutoCAD drawing, No is displayed under the Linked column of the "Items found in dcTrack" list. If the item is already linked, Yes is displayed.
3. Link the items to objects in the AutoCAD drawing in one of the following ways:

   a. Link one object to one AutoCAD object:

   - Select the item from the "Items found in dcTrack" list.
   - Select an object from the "Objects found in AutoCAD Drawing" list.
   - Click "Link dcTrack Item with AutoCAD Object".

   Note: Using this method of linking also allows you to link AutoCAD objects to objects in dcTrack that do not have matching object labels.

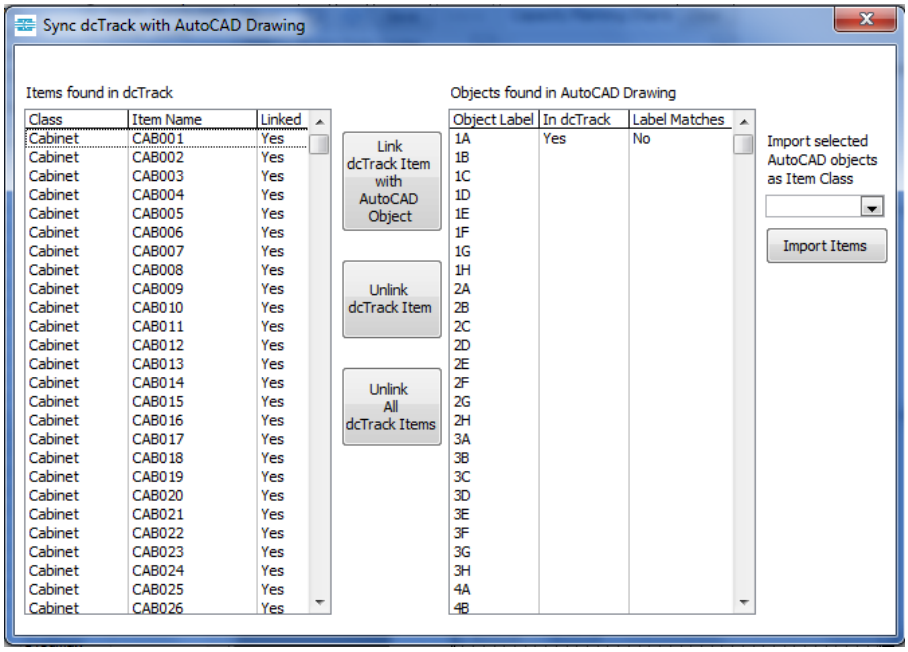
   ---
4. Link those objects found in the AutoCAD drawing with dcTrack items.

   a. Link multiple objects to the AutoCAD drawing:

- Select objects of the same item class from the "Objects found in AutoCAD Drawing" list. Use Ctrl + click or Shift + click to select multiple items.
- Select the corresponding item class from the "Import selected AutoCAD objects as Item Class" drop-down and click Import Items.

All new items that have been imported are now visible in dcTrack in the floor map items list and on the corresponding Item Class page.

5. Double-click on each item or click Detail 1 to complete all relevant fields for each item. From the Actions drop-down, select Submit New Item Request for Approval.



Importing AutoCAD Items into dcTrack

You are able to import AutoCAD® objects into dcTrack. Once an object has been imported, you can edit its detail information from its corresponding Items page. For example, you can import a cabinet represented on an AutoCAD drawing, select IT Items > Cabinets to locate it, and then edit the cabinet information.

To import an AutoCAD object into dcTrack:

1. Select Visualize > Floor Map to open the Floor Map page.
2. Click the AutoCAD Sync button . The Synch dcTrack with AutoCAD Drawing dialog opens.
3.

A blank space appears in the "In dcTrack" column of the "Objects found in AutoCAD Drawing" list if the objects are found in the AutoCAD drawing but are either not found in dcTrack or are in dcTrack with a matching label that is not linked to AutoCAD.

Note: Not every floor-standing item has to have a link. For example, the UPS units may not be located within the data center raised floor room, so the UPS exists in dcTrack but will not have a link to the AutoCAD drawing.

4. If the items already exists in dcTrack but have not been linked to the AutoCAD drawing, No is displayed under the Linked column of the "Items found in dcTrack" list. If the item is already linked, Yes is displayed.
5. Select objects of the same item class from the "Objects found in AutoCAD Drawing" list. Use Ctrl + click or Shift + click to select multiple items.
6. Click Import Items. The items are added to the "Items found in dcTrack" list. Close the Synch dcTrack with AutoCAD Drawing dialog.
7. Edit the item(s) as needed.

Visio Drawings

If your floor plan is in Microsoft Visio® rather than AutoCAD®, you can save it as a DWG file and then import it into dcTrack. This Save As conversion can be repeated each time the drawing needs to be modified.

In the following instructions, the term "shapes" refers to the Visio drawing element that is used to represent an item in a data center. For example, a server may be represented by a rectangle.

Visio-to-AutoCAD Export Rules

Due to the behavior of the Microsoft Visio®-to-AutoCAD® export, you must follow these rules when creating the drawing in Visio in order to provide proper visualization once the drawing is imported into dcTrack.

Each floor plan object must use a solid fill color other then 01:White.

To add a fill color to a shape in Visio:

1. Right-click the object and choose Format > Fill.
2. Select a color and set the pattern to 01:Solid.

The specific color is not important since it will not be seen in dcTrack.

Visio shapes on a layer cannot use a black border.

In Visio, an object border is drawn in black and is then filled in with another color. For example, a rectangle with a black outline may be filled in with blue. When the drawing is converted to DWG and opened in dcTrack, the object is filled in with black since the color of the rectangle border is used for the fill color and not the fill color itself.

To change the boarder and fill color for shapes on a Visio layer:

1. In Visio, go to View > Layer Properties. The Layer Properties dialog appears.
2. Create a new layer for the objects by selecting the New... button, naming the layer in the New Layer dialog and clicking OK.

   Important: Do not begin the name of any layer with the word "dcTrack" unless you are directed to do so.

3. Using the Layer Color drop-down on the Layer Properties dialog, select a color. To change the color to the same color that dcTrack uses for cabinets (AutoCAD's color 81), click on More Colors… from the color drop-down in Visio and select the Custom tab.
   a. Enter the RGB colors as follows:
   - Red = 159
   - Green = 255
   - Blue = 127
4. Click OK to apply the changes to the layer.
5. Next, make sure all objects are assigned only to the layer you just created. To do this, turn on the Format Shape toolbar and select an object. The layer name will be displayed in the toolbar for all objects selected.

   Note: When you do this, the rectangle of the object takes on the color of the layer and no longer appears to be filled even though it is.

Objects will not have a black border to define them from each other after you complete these steps and save the Visio drawing as an AutoCAD® file. Instead, the object border and its fill use the color of the layer. If you want the Visio objects to use a boarder that is a different color than the fill, do the following as a workaround.

To create a boarder for the objects:

1. Draw an additional rectangle that has no fill (Pattern = None) around each object that is not assigned to a layer (Layer = {No Layer}). This is similar to the way it would be done in AutoCAD, where the rectangle and the hatch are two separate objects.

2. To easily distinguish classes of objects, create separate layers and colors for each type of floor-standing object in the data center such as a cabinet, PDU, CRAC or UPS.
3. Text labels should be modified if the text wraps to multiple lines. Text wrapping causes AutoCAD to insert a dash at the end of each line.

   The workaround to this issue is to size the text box of the label to be wide enough so that the text does not wrap. Reducing the font size also helps prevent wrapping.

Each floor plan object must have a unique text ID.

To add a text ID to a Visio object:

1. Double-click on the object to put it in edit mode and type the text ID or use the Text Tool to add a text box.
2. Make sure the text box is inside the floor plan object.
3. Create duplicate objects with no fill and no text ID.

Duplicate objects cannot be on a layer.

Place them on top of the original object to provide borders for the objects. This is important to clearly distinguish multiple objects arranged side-by-side in a row.

The Visio Measurement Units setting must be set to inches, not feet and inches.

If you are using US units in the Visio drawing, the Measurement Units setting must be set to inches rather than feet and inches.

To change the measurement setting in Visio:

1. Select File > Page Setup.
2. Select the Page Properties tab.
3. Select Inches from the "Measurement units" drop-down.

Floor Map Color Coding

The colors of the data center objects on the Floor Map page are defined in the AutoCAD® drawing file. However, once floor map objects are selected in dcTrack, the following color codes are used:

Object	Color
Selected object - light blue (cyan)	
Origin object - red	

Object	Color
Destination object - red	

Navigating the Floor Map

Zooming

The following zoom options are available for the floor map:

- Use the mouse wheel to zoom in and out on a drawing.
- To zoom in on a particular item, click on the drawing object or click on the item in the list to the left of the drawing area.
- Select a zoom level from the Zoom Level drop-down. The default zoom level is 75%.
- Use the left mouse button to draw a window around a particular area to zoom in on it.
- Zoom out to view the entire data center by clicking on the Fit View to Entire Data Center icon in the toolbar.
- Select a user-defined zoom-in area from the Current View drop-down in the toolbar. See ***Creating and Deleting a Custom Floor Map View*** (on page 72) for more information.

Panning

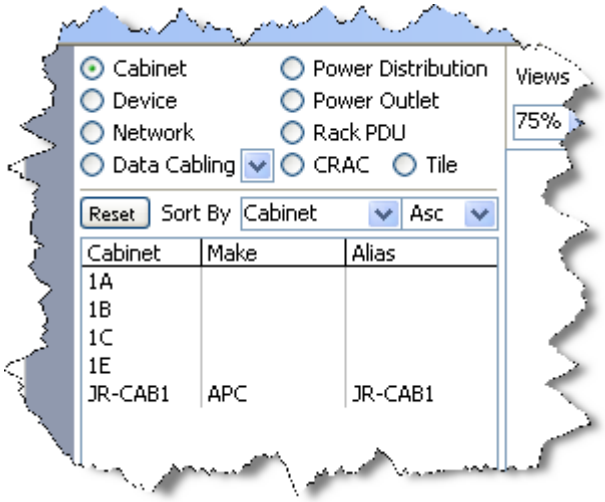
Turn panning on or off by clicking on the Allow Panning icon in the toolbar. You can then use the vertical and horizontal scroll bars to move around the drawing, or press and hold the mouse wheel and drag it to pan.

Viewing Linked Objects

Clicking on an object in the floor map changes the object's color to indicate it is selected and the name of the item it is linked to is highlighted in the item list in the left panel of the Floor Map page. Conversely, if you click on an item in the item list in the left panel of the Floor Map page the object that it is linked will be highlighted on the floor map.

Item Class Radio Button

The item radio buttons at the top left of the Floor Map page act as filters. By selecting a radio button, the list is filtered to show only the items in that item class. By default, the first time you open to the Floor Map page, the Cabinet radio button is selected.



Data Cabling Radio Button

When you select the Data Cabling radio button, you have the option of applying one of two views to the page:

- One-to-Many View - Shows the cable routes that run from the selected cabinet to all of its destination cabinets.
- Cabinet Pairs View - Shows the cable routes between cabinet pairs.

No matter which view you apply, when you select a cabinet from the item list or click on it on the floor map, the floor map zooms in around the cabinets. The original cabinet is displayed on the floor map in light blue (cyan) and the destination cabinet(s) is displayed in red. The list also contains the cable media type, such as twisted pair, fiber and so on, as well as the cable size.

Power Distribution Radio Button

If the Power Distribution radio button is selected, the PDU items and all circuit breaker panels that are internal to the PDUs, RPPs and busways are displayed.

If a PDU is selected from the list or if you click on it on the floor map, the floor map zooms in on the selected PDU. The PDU, which is the origin of the power distribution chain, is displayed in light blue (cyan) and the cabinets, which are the destination of the power chain, are displayed in red. If the power cables are available from the AutoCAD® drawing, they are displayed too.

The circuit panel boards internal to a PDU are shown in a list. If selected, the floor map view displays only the subset of destination cabinets and power cables that are fed from the selected panel board.

If an RPP exists, it can be selected from the list or by clicking on it on the floor map. If a busway system exists, it can be selected from the list

CRAC Radio Button

Selecting the CRACs radio button displays all CRAC units in the data center.

Selecting an item from the list of CRAC units zooms in on and highlights that unit. It also draws an elliptical outline from the center of the unit, indicating an approximate representation of this unit's zone of influence. The ellipse is drawn to a dimension provided for that particular unit and in the direction specified. These two values are found in the Environ. Items CRAC Detail 1 page in the CRAC Coverage box. The length of the inside smaller ellipse is drawn to the dimension provided in the Throw field. The outside larger ellipse is drawn to be 35% longer. The Direction drop-down specifies the direction the ellipses are drawn relative to the site's North position, which is specified for the site on the Sites page.

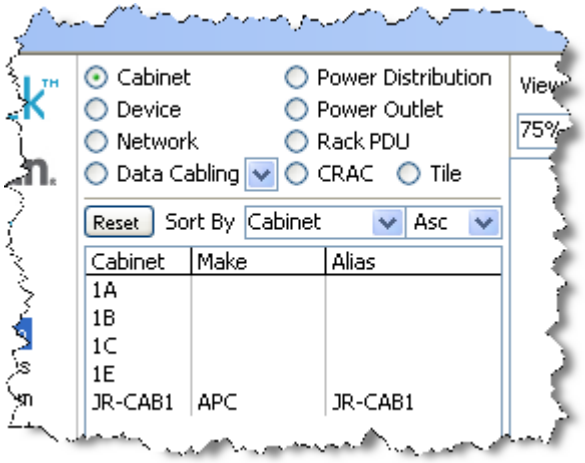
Tile Radio Button

When the Tiles radio button is selected, the list displays all CRAC units in the data center and the drawing displays all perforated floor tiles.

Note: To add and remove tiles in the drawing, the tile objects must be drawn in from AutoCAD®. Please refer to **Adding and Removing Tiles on the Floor Map** *(on page 71) for instructions adding perforated tiles to the drawing.*

Sorting Items on the Floor Map

The sort feature works in conjunction with the item radio buttons to sort the information displayed in the left frame of the Floor Map page. The information displayed in this frame will vary depending on the item radio button that is selected. For example, if the Cabinet radio button is selected, cabinet-specific information is displayed and can be sorted.



If you select an item such as a specific cabinet and then select another item class such as device, only the devices contained in the selected cabinet will be displayed in the list. To view all items in a specific class, click Reset and select the appropriate item class radio button.

Adding and Removing Tiles on the Floor Map

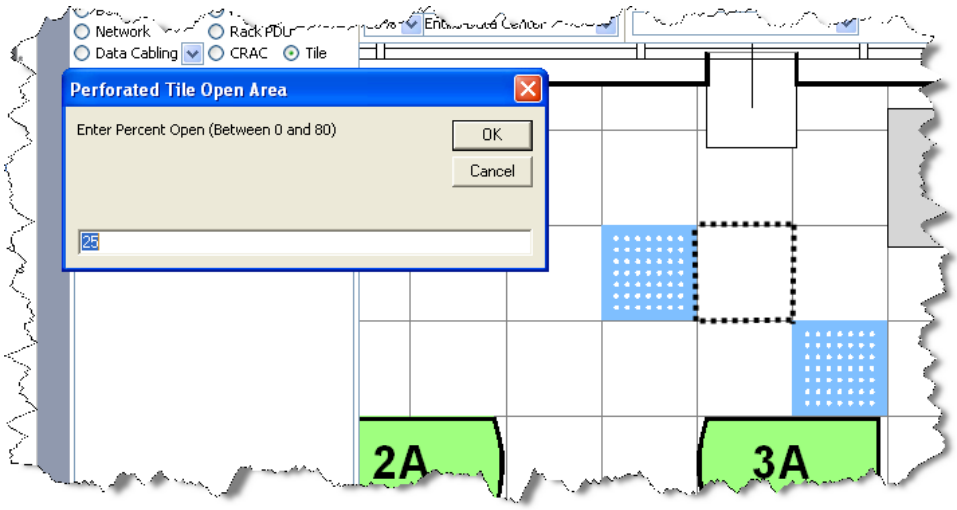
The Gatekeeper can add or remove floor tiles on the floor map drawing. To add and remove tiles in the drawing, the tile objects must be created in AutoCAD® and then imported into dcTrack. Please refer ***Optional Feature Requirements*** (on page 58) for instructions on how to add a perforated tile to the drawing in AutoCAD.

To add a tile:

1. Click the Tiles radio button and then click on a blank tile location on the floor map grid.

   Tip: Zoom in on the floor map to get a better view of the tile grids.

2. Enter the percentage of the tile's open area in the Perforated Tile Open Area dialog. For example, entering 25 means that 25% of the tile's area is open. This information is found in the tile's data sheet.
3. Click OK. The tile will be added to the floor map.



To remove a tile:

- Click the Tiles radio button and then click on the tile to be removed from the grid. Once selected it will be removed.

Creating and Deleting a Custom Floor Map View

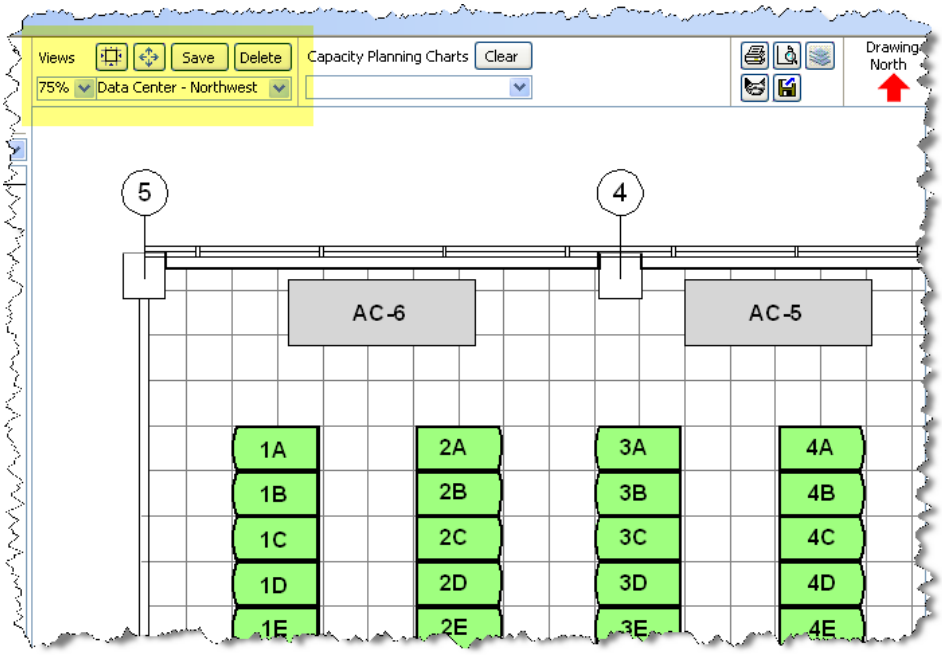
dcTrack allows you to create a custom view of a floor map. Once a custom view is created, it is added to the Views drop-down on the Floor Map page. For example, you can create a custom view of the floor map that consists of just the west end of the data center.

The Delete icon is only available when a custom user view other than the "Entire Data Center" view is selected. Once a custom view is created and applied to the floor map, however, it can be deleted as needed.

To create a custom view:

1. Select Visualize > Floor Map to open the floor map for the data center.
2. Customize the view as needed. For example, zoom in on a specific section of the floor map to make that a part of the custom view.
3. Click Save in the Views section of the task bar at the top of the page.
4. Click No on the "Do you want to overwrite the View Entire Data Center with the current view" dialog.

5. Enter a name for the custom view in the "Please Enter a new View Name" dialog and click OK. The custom view is added to the View drop-down.



To delete a custom view:

1. Select Visualize > Floor Map to open the floor map for the data center.
2. Select the custom view from the drop-down in the Views section of the task bar.
3. Click Delete and then click Yes to confirm the deletion.

Viewing Capacity Planning Charts

The Capacity Planning Charts drop-down shows a list of predefined visual floor map reports. Select a report from the list to apply it to the floor map. The Clear button clears the selected report view and returns the floor map to its default view.

The following color coding is used in the report to indicate capacity:

Color code	Color
High - red	High
Medium - yellow	Medium
Low - green	Low

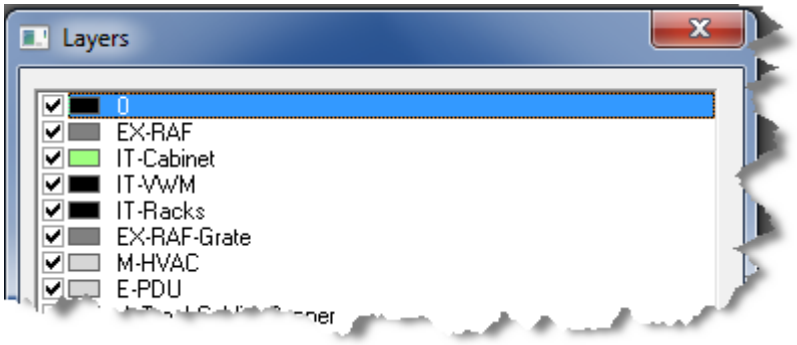
Color code	Color
No information - gray	No Information

Turning AutoCAD Layers On and Off on the Floor Map

AutoCAD® drawing layers that are applied to the floor map can be turned on and off from the Layers dialog. For example, you can turn off the layer that displays the air conditioning units while leaving all other objects visible on the floor map. When you turn a layer off, the text ID for the item is still visible in the floor map but the drawing object is removed.

To turn a layer on and off:

1. Select Visualize > Floor Map to open the floor map for the data center.
2. Select the Layers icon in the toolbar. The Layers dialog appears.
3. Deselect each a layer to turn it off, click Unselect All to deselect all layers, or select layers to turn them on. Click OK.

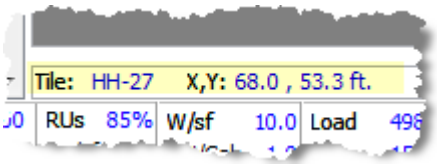


Printing the Floor Map

The Print icon automatically prints the current floor map view using your default printer. The Advanced Print icon opens the Print Preview dialog that allows you to control print settings such as printer configuration, orientation, drawing scale, drawing line weight settings, etc.

Using Tile: X,Y Coordinates

The Tile: X,Y field at the bottom of the Floor Map page displays the data center raised floor grid coordinates. The A1 reference coordinate is defined in the AutoCAD® drawing.



Elevations

Elevations are a graphical representation of data center cabinets and their contents.

From the elevation view, you can navigate to specific servers, ports, PDUs, and so on by clicking on a Cabinet link at the top of each Cabinet column. Double-clicking on an item in a cabinet displays an image of that item. For example, if you want to view a server within a cabinet, double-click on the server and an image of it is displayed in a dialog. You are able to specify the cabinets that are displayed by selecting the row, cabinet group, percent full, manufacturer or custom information.

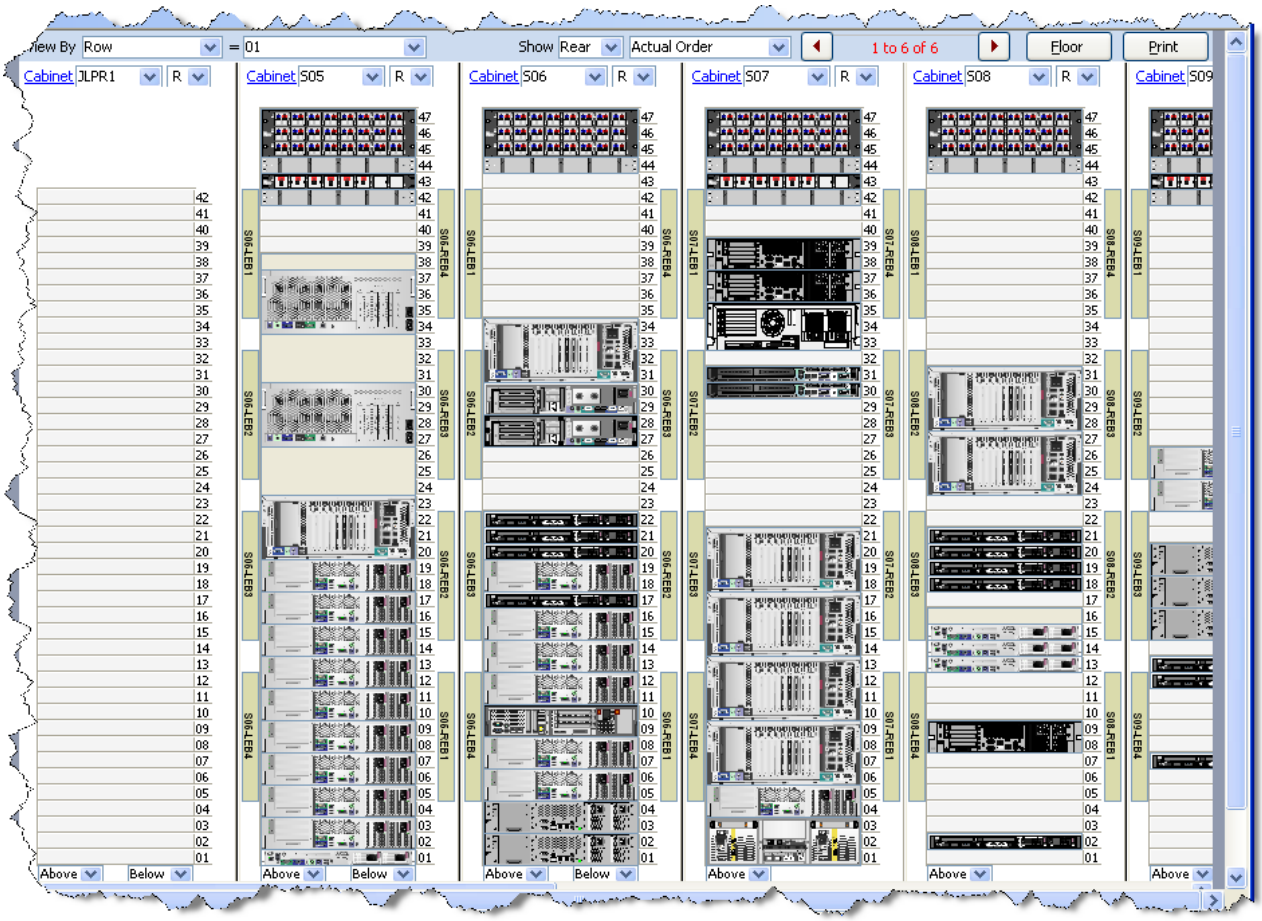
By default, your view of the cabinets is in a text view and uses color coding to identify the type of item within the cabinet. See ***Cabinet Elevation Color Coding*** (on page 77). However, if images of the items are available, you can use the Show > Front or Show > Rear settings and the actual images of the items are displayed in the elevation. The dialogs the images open in contain Front and Rear buttons that allow you to alternate between the front and rear view of the item.

To view the cabinet details for a specific cabinet, click the Cabinet link that appears above the elevation. Use the Front, Rear and Text drop-down that appears above the elevation to move between those views.

The Above and Below drop-downs allow you to view the power. The power can be physically located above or below the cabinet.

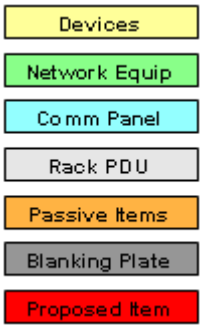
Clicking the Floor button opens the AutoCAD® drawing. The cabinets that are selected are highlighted in the drawing. Clicking Print prints the cabinets and cabinet information.

The Elevations page displays up to 12 cabinets at a time. If the requested view contains more than 12 cabinets, use the Right and Left arrow buttons to navigate to the previous and next 12 cabinets.



Cabinet Elevation Color Coding

In any page with a cabinet elevation, the color legend of the items mounted in the cabinet is available by clicking on the Cabinet Color Legend icon ?.

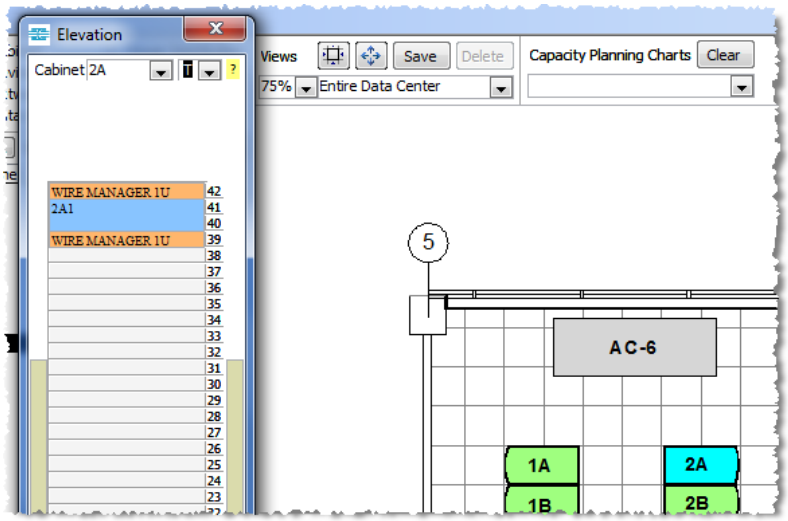


Viewing Cabinet Elevations and Item Details

Double-clicking on a cabinet on the floor map opens the Cabinet Elevation view. This view displays the items that are contained in the cabinet in Text view. From the Elevation view, select R (Rear) or F (Front) from the drop-down at the top of the dialog to see the images as graphics versus text.

To view details for a cabinet, double-click on the name of the cabinet in the left frame of the Floor Map page. The Details page for that cabinet will open in a secondary window.

Double-clicking on a floor PDU opens the Item Details dialog. This dialog contains the floor PDU's power panels with the corresponding circuit breakers.



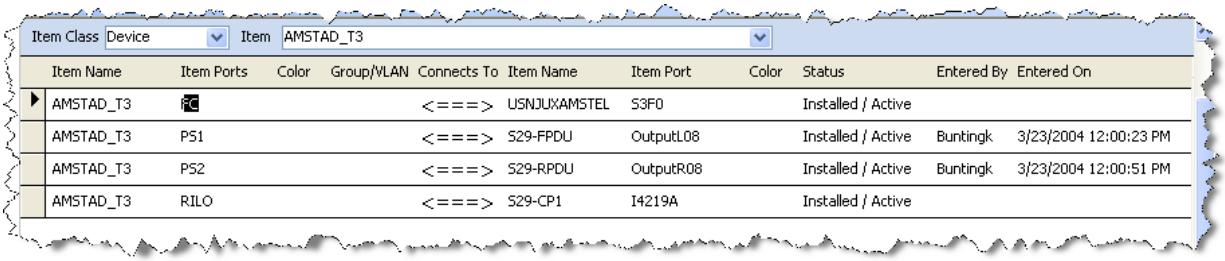
Trace Items

Use the Trace Items page to trace the all port connections for the selected item. Clicking on a connection in the list allows you to open and view a list of all connections for the item. This includes viewing the item ports used by the connection, color coding applied to the connection to identify it, and the current status of the connection. The user who created the connection and the date and time it was created are also displayed.

To trace items:

1. Select Visualize > Trace Items.
2. Select the item class and the item. The connections for the item are displayed.

3. Double-click on any row to trace the full circuit for that port.


Item Class Device
Item AMSTAD_T3
Item Name Item Ports Color Group/VLAN Connects To Item Name Item Port Color Status Entered By Entered On
AMSTAD_T3 FC <===> USNJUXAMSTEL S3F0 Installed / Active
AMSTAD_T3 PS1 <===> S29-FPDU OutputL08 Installed / Active Buntingk 3/23/2004 12:00:23 PM
AMSTAD_T3 PS2 <===> S29-RPDU OutputR08 Installed / Active Buntingk 3/23/2004 12:00:51 PM
AMSTAD_T3 RILO <===> S29-CP1 I4219A Installed / Active

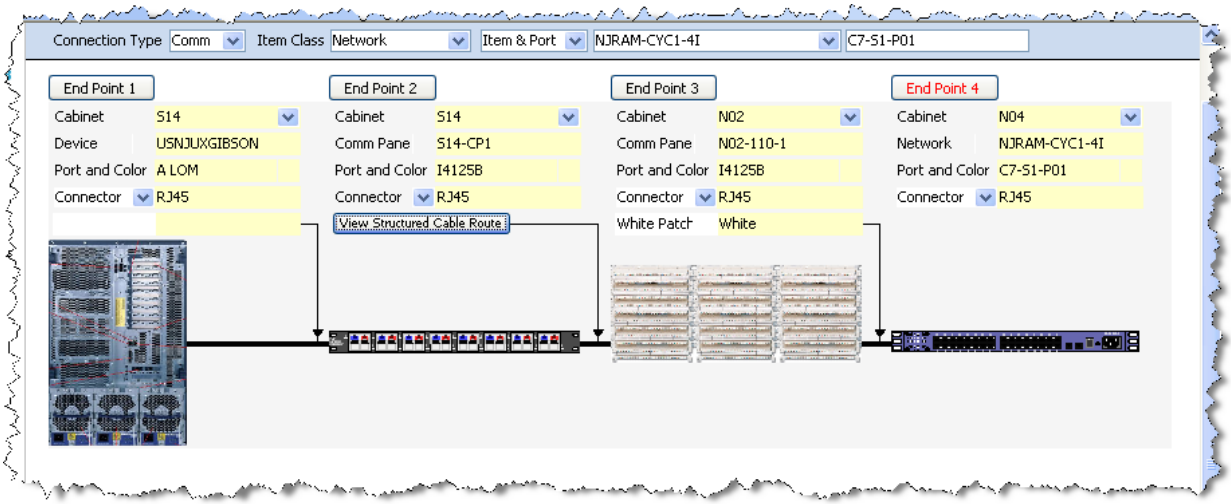
Trace Ports

The Trace Ports page provides you with a graphical view of the comm and power port connections between items. The connections are displayed as end-to-end circuits.

Clicking on an End Point button displays the details. Double-clicking on the image of the item shows the enlarged image and highlights the port involved in the connection. If the circuit includes comm panels, click the View Structured Cable Route button to view the cable route between the two comm panels on the floor map.

To trace ports:

1. Select Visualize > Trace Port.
2. Select the connection type and the item class.
3. Define the criteria used to find (lookup) the connection - item and port, cord ID, or MAC address.
4. Select the item. The port connections are displayed.



Power Path

The power path displays the power circuits of all connected power supplies in the data center from the main UPS and all points in between.

Use the Power Path page to select a power supply, a rack PDU input cord or output receptacle, or a power outlet. This expands the tree hierarchy to reveal the power path for selected item and port.

For each node in this tree hierarchy, the relevant power information is displayed. The Node Specification box shows the power data for the selected node as defined by the manufacturer. The Downstream Power Sum box shows the power totals at the selected node in its three phase form. This data is arranged in nameplate, budget and measured values.

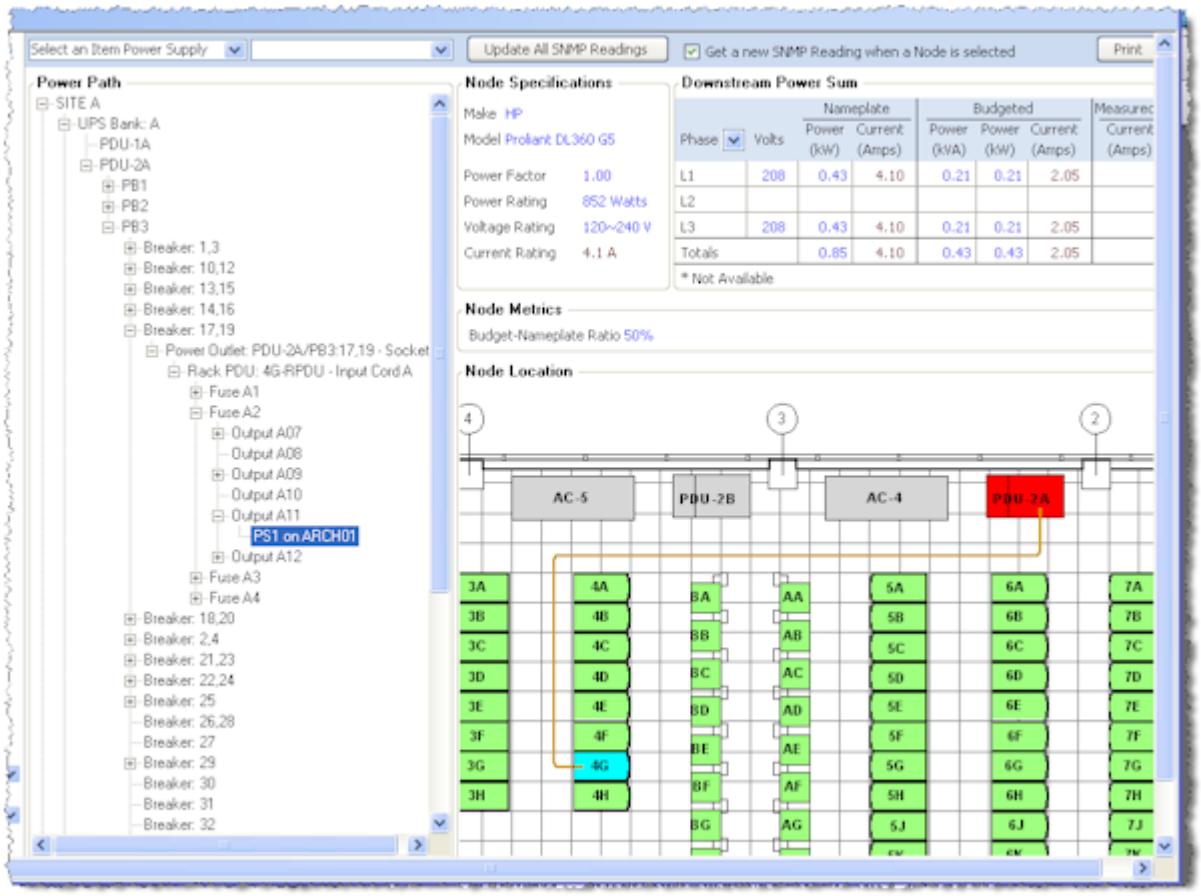
- Nameplate values are the sum of the nameplate values of all power consuming items below the selected node.
- Budget values are the sum of budget values for those same items.
- The Measured column displays the current in amps for the selected item or the sum of measured current from the items below the selected node.

If the "Get a New SNMP Reading when a Node" checkbox is selected, each time a node is selected, dcTrack generates a SNMP request to the selected node for new power data (provided that item is SNMP-capable, has an IP address, comm port and an associated SNMP MIB). If you do not wish to generate SNMP request each time a node is selected and configured with a comm port, deselect the "Get a New SNMP Reading when a Node" checkbox. Alternatively, click Update All SNMP Readings to get a new reading for all SNMP-capable items in your data center.

To view power paths:

1. Select Visualize > Power Path.

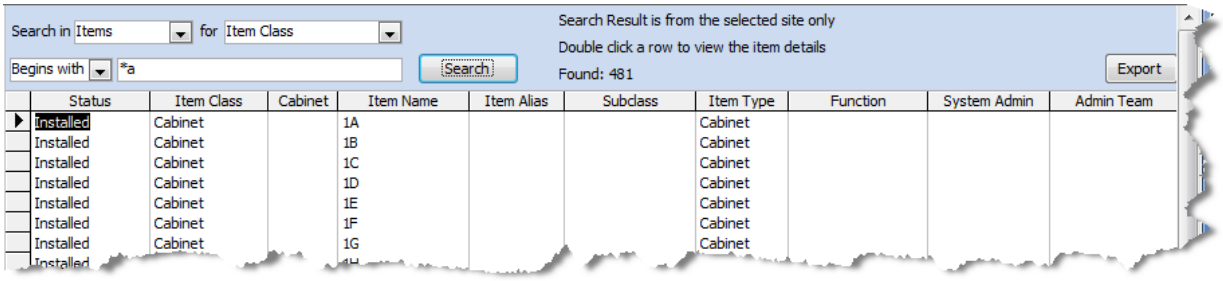
2. Select the item and port you want power information on.



Search Items

The Search Items page allows you to quickly and easily locate items in the data center by searching through items, ports, custom fields you have created, applications, and discovered applications. dcTrack provides you with the ability to search based on a wide range of criteria such as item name, item type, model, manufacturer, and so on. Further, you are able to define the parameters of the search so you control how narrow or wide your results are. Once items are found that match your criteria, you can view them by double-clicking on them in the list. You can also export your search results to a spreadsheet by clicking Export and providing a file name.

The search criteria and fields that are displayed in the results will vary based on the item type you select. For example, if you are searching items, Status, Item Class, Item Name fields and so on are criteria by which you can search. If you are searching applications, you can select criteria such as Application Name, User Departments and so on.



IT, Power and Environmental Items

When you add, discard and move items in dcTrack, you are capturing/editing the item information in the dcTrack database. Once an item is added to dcTrack, you create a work order to apply the change to the physical data center. You can edit the information as needed, as well as create clones of existing items in order to decrease the need to add the same or similar information to the database over and over again.

Adding Items

Cabinets

To add cabinets:

1. From the Explorer menu, select IT Items > Cabinets.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.

a. Enter the cabinet ID. **Required**

b. Select a make and model. **Required**

c. Enter cabinet placement information.

d. If needed, select cabinet wire management information.

e. Assign a system admin/admin team to the cabinet.

5. Complete all relevant Detail 2 information if needed:

a. Enter notes.

b. Enter maintenance and support information.

c. Complete custom user fields (if applicable).

6. Click Save. The saved item is tagged with a status of Unapproved.

7. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Devices

To add devices:

1. From the Explorer menu, select IT Items > Devices.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. Select the server type from the available radio buttons: Physical, Blade Chassis, Blade or VM.
5. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.

a. Enter a name for the device. **Required**

b. Make the appropriate selections from the Make and Model drop-down lists. **Required**

c. Select the cabinet and the specific rail position to house the item being added by selecting the cabinet ID from the Cabinet and Rail Position drop-downs. **Required**

d. Enter disk volume, device placement information, and device note information, if needed.

e. If needed, add VM clusters. See ***Adding Virtual Machine (VM) Clusters to a Device Item*** (see "***Virtual Machine (VM) Host***" on page 88).

f. Enter IP addresses, if needed. See ***Assigning, Editing and Deleting Port IP Addresses*** (on page 109).

g. Create communications ports and power ports, if needed. See ***Creating Ports*** (on page 97).

h. If needed, add applications. See ***Adding Applications to a Device Item*** (on page 85).

6. Complete all relevant Detail 2 information if needed:

   a. Enter notes.

   b. Enter maintenance and support information.

   c. Complete custom user fields (if applicable).

7. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.

8. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Changing a Physical Server to a VM

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To change a physical server to a VM server:

1. From the Explorer menu, select IT Items > Device.
2. Select the device you want to change to a virtual machine.
3. Select Edit from the Page Mode drop-down.
4. From the Actions drop-down, select Convert Item to VM.

   If the device item has comm and power ports that are connected to it, these ports are disconnected when the server is changed. Also, if the item has power ports, disk volumes, and IP and MAC addresses, these ports, disks and MAC addresses are deleted and the IP addresses are released back to the IP subnet database. However, any applications assigned to this device item remain unchanged.

The Gatekeeper then reviews and approves/rejects the request(s) and issues the associated work order(s).

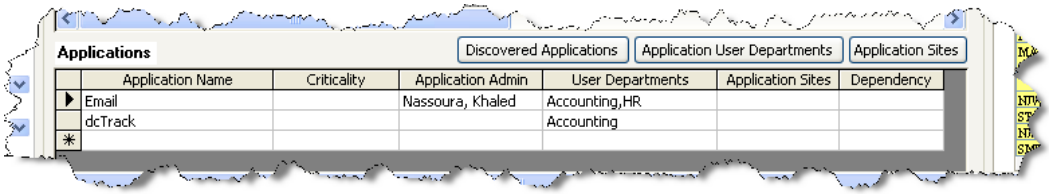
Note: All requests for converting the item and making the comm port and power ports disconnections are linked together and can be approved by simply choosing to approve any of the associated requests.

Note: Disconnection work orders must be completed before an Item Discard work order.

Once the work orders are completed and the requests are marked as Complete, the conversion process is then complete.

Adding Applications to a Device Item

In the bottom section of device Detail 1 item pages, there is a form to track as many applications as needed. Applications can be added manually or through SNMP, and they can be added when the item is initially added to the application or after it has been added.



For each application, there are five fields that can be used for tracking:

- Criticality
- Application Admin
- User Departments - This field can be managed by clicking on the Application User Departments button.
  a. From the dialog, select the application from the Application Name drop-down.
  b. Make the corresponding selection from the User Department drop-down
  c. Click Add. Repeat these steps as needed to add multiple user departments for each application.
  d. Click Close to save and close.
- Application Sites - This field can be managed by clicking on the Application Sites button.
  a. From the dialog, select the application from the Application Name drop-down.
  b. Make the corresponding selection from the Application Sites drop-down
  c. Click Add. Repeat these steps as needed to add multiple sites for each application.

d. Click Close to save and close.

- Dependency

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To add an application:

1. From the Explorer menu, select IT Items > Device.
2. Select the device you want to add the virtual machine to.
3. Select Edit from the Page Mode drop-down.
4. Add the application manually or through SNMP.
   - Manually:
   a. From the Application Name drop-down, select the application to be tracked.
   b. If the application name does not exist in the list, then switch to Add page mode and select Add New Application Name from the Actions drop-down. The Manage Lists dialog appears. Add the application name and click Save. Switch back to the Edit page mode and go back to the device item in question.
   - Auto-Discovery
   a. Click the Discovered Applications button. The Apps from SNMP dialog appears. All applications that were auto-discovered via SNMP and are installed on the device item are displayed. If no applications are displayed or the specific application you are looking for is not displayed, run the SNMP process again.
   b. Select applications to be added.
5. Click Update and then click Close.

Chassis and Blade Devices

Chassis and blade devices can be added when the item is initially added to the application or after. Before adding blade devices, a blade chassis must be created. The only variation from creating a physical server is selecting the chassis in which the blade server is mounted.

To add a blade chassis:

1. From the Explorer menu, select IT Items > Device.
2. Select Add from the Page Mode drop-down.
3. Select the Blade Chassis radio button, which is located immediately above the Name field.

4. Enter the item information. Once a chassis has been created, blade devices can be added.

To add blade devices:

1. Select Add from the Page Mode drop-down.
2. Select the Blade radio button.
3. Enter the item information.
   a. Select the chassis from the Chassis drop-down.
   b. Select the slot number from the Slot drop-down.

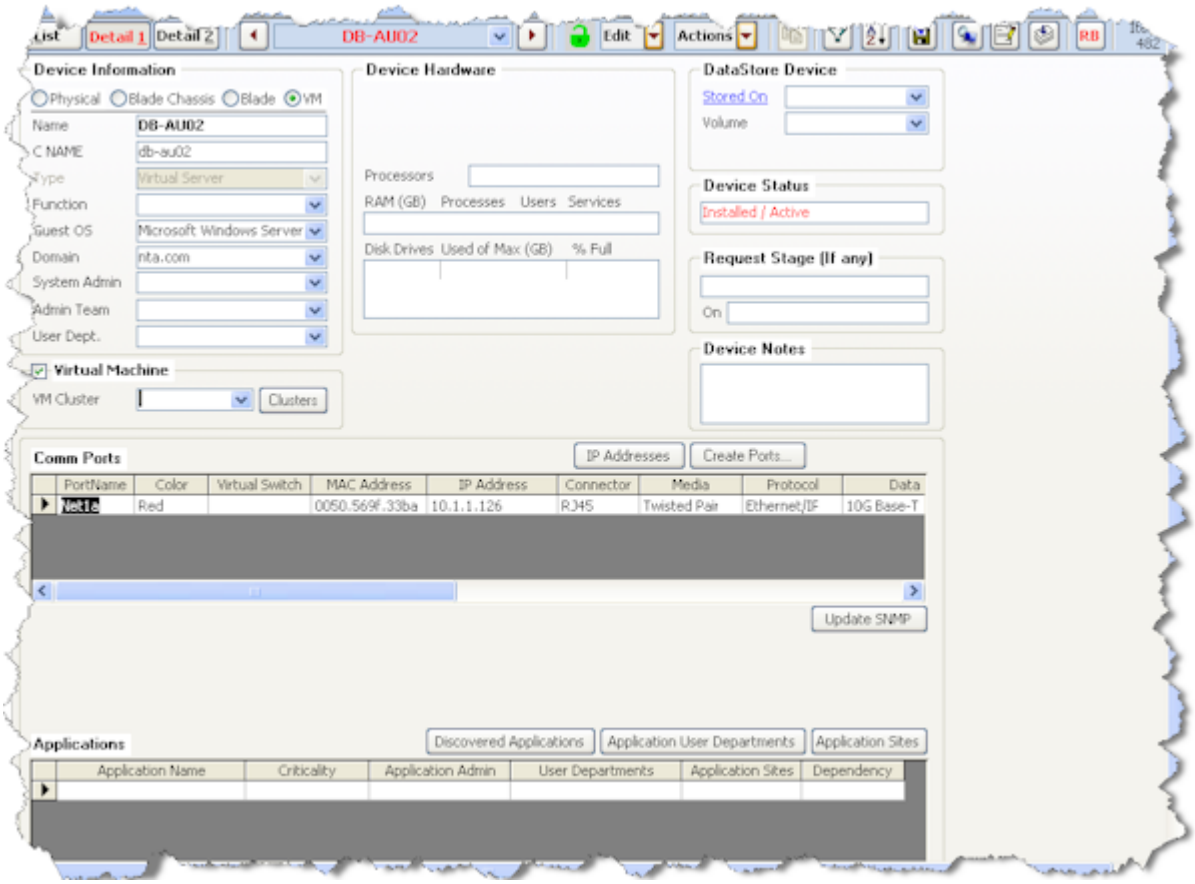
Note: You cannot assign a blade to a chassis unless the chassis has been assigned to a cabinet.

4. If needed, create comm ports for both the chassis and the blades, and assign applications to the blades just as you would for a device.

Note: In the List page, a chassis and its blade devices are all listed as individual items in the list.

Virtual Machine (VM) Host

For a server to be treated as a VM host, the Virtual Machine Host checkbox on the device's Detail 1 page must be checked. Once checked, the VM Cluster drop-down is displayed. A VM cluster can be added when a device is initially being added or after it has been added. See ***Devices*** (on page 83).



To create a virtual machine:

1. From the Explorer menu, select IT Items > Device.
2. The Virtual Machine Host checkbox is selected by default. The Cluster drop-down will be enabled and you can add them as needed.

To create a VM cluster:

1. Switch to Edit or Add page mode and click the Clusters button. This opens the Clusters and Virtual Machines dialog.
2. In the Virtual Machine Clusters list, click Add.
3. Add a new cluster name and close the dialog.

4. From the Cluster drop-down, select the appropriate VM logical cluster to be associated with the VM.

To view the associations between a VM, a VM logical cluster and the physical servers (hosts):

1. Click the Clusters button. The Clusters and Virtual Machines dialog appears.
2. Click on the desired cluster in the Virtual Machine Clusters list to view the associated physical servers (VM hosts) in the Physical Machines in Cluster list, as well as all the VMs that belong to a the selected VM cluster. Additionally, you can view and modify the virtual switches that belong to the selected VM cluster by clicking on the Add, Edit or Delete buttons next to the Virtual Switches in Cluster list.

Networks

You are able to add chassis-based or stackable-based network items.

Each blade item name is automatically generated. The blade item name consists of the chassis item name followed by a dash and a number that indicates the blade's slot position in the chassis.

Note: While each blade switch is an item, it cannot be selected individually from the List page or the Record Locator in the toolbar. You must first select the chassis item from the List page or Record Locator.

Each switch item name is automatically generated using the stack item name followed by a dash and a number that indicates its position in the stack.

Note: Each stackable switch is an item that can be selected from the List page or the Record Locator in the toolbar.

To add networks:

1. From the Explorer menu, select IT Items > Network.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. Enter a name for the item. The item name is the logical name for the chassis or stack.
5. After you enter the item name, the cursor moves to the "Network Equipment Logical Information of" drop-down. Select either Chassis or Stack. You must make a selection before you can move on to other fields.

   Once this selection is made for a network item it cannot be changed. If it was made incorrectly, you have to delete the item and add a new one.

6. For a chassis switch and switch blades:
   a. In the Network Equipment Physical Information box, select the Make and Model and complete the remaining information for the chassis.
   b. Click Add to add the blades. After adding a blade, you can select any blade in the list and modify its asset information.
7. For a stackable switch:
   a. In the Network Equipment Physical Information box, make the appropriate selections from the Make and Model drop-downs and complete other information for first switch in the stack.
   b. Click the Add button to add additional switch items to the stack. After adding a switch item, you can select any item in the stack from the list and modify its asset information to the right.
8. Use the Create Ports button to create the ports. See ***Creating Ports*** (on page 97). If the ports are for a chassis, select chassis rather than a blade.
9. Select Layer 2 from the OSI drop-down if you want the item to appear on the Subnet and VLAN Management dialog in the list of switches. See ***Subnets and VLANs*** (on page 117) for more details.
   a. If needed, add Subnets and VLANS. See ***Subnets and VLANs*** (on page 117).
   b. Enter the network equipment's physical information, such as make and model, if needed. The information collected in this section will vary based on the network configuration you applied.
   c. Enter the cabinet and rail placement information for the network equipment. **Required**
   d. Enter network equipment notes, if needed.
   e. Create communications ports and power ports, if needed. See ***Creating Ports*** (on page 97).
   f. Enter IP addresses, if needed. See ***Assigning, Editing and Deleting Port IP Addresses*** (on page 109).
10. Complete all relevant Detail 2 information if needed:
    a. Enter notes.
    b. Enter maintenance and support information.
    c. Complete custom user fields (if applicable).
11. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.

12. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Adding Subnets to Network Items

In order to add a subnet to a network item, it must first exist in dcTrack. See ***Subnets and VLANs*** (on page 117) for information on adding subnets to dcTrack. As many subnets as are needed can be added.

Subnets can be added to network items either when the network item is initially added or after it has been added. Subnets can be added from the Detail 1 page or from the Subnets and VLAN Management dialog accessed from the Subnets page. See ***Adding and Removing Item Subnets (from the Subnets and VLAN Management Dialog)*** (on page 120).

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To add a subnet to a network item:

1. Open the Detail 1 page of the network item you want to add a subnet to.
2. Select Edit from Page Mode drop-down.
3. Click the Subnets & VLANs button. The Subnet and VLAN Management dialog appears.

   You can associate equipment and subnets in one of two ways: add subnets to selected equipment (network items) or add equipment to specific subnets. Either method results in the same association.

4. Add subnets to equipment:
   a. Leave the "Show Subnets served by selected Equipment" radio button selected.
   b. In the Network Equipment in OSI Layer 2&3 list, select the equipment you want to add the subnet to. If other subnets are already applied to the equipment, they will be displayed in the "Subnets in" list. Use the Shift or Ctrl keys to make multiple selections.
   c. From the All Subnets list, select the subnet you want to add to the equipment and then click the < Add button. The subnet will be added to the equipment and displayed in the "Subnets in" list. Use the Shift or Ctrl keys to make multiple selections.
5. Add equipment to subnets:
   a. Select the "Show Equipment serving selected Subnet" radio button.

b. From the All Subnets list, select the subnet you want to add to the equipment. The equipment the subnet is currently associated with (if any) will be displayed in the "Equipment serving Subnet" list. Use the Shift or Ctrl keys to make multiple selections.

c. In the Network Equipment in OSI Layer 2&3 list, select the equipment you want to add the subnet to and then click the < Add button. The subnet will be added to the equipment and displayed in the "Equipment serving Subnet" list. Use the Shift or Ctrl keys to make multiple selections.

6. Close the dialog and click Save on the item's Detail 1 page to add the subnet.

Comm Panels

To add comm panels:

1. From the Explorer menu, select IT Items > Comm Panels.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.
   a. Enter a comm panel ID. **Required**
   b. Select a comm panel type.
   c. Select the make and model of the comm panel. **Required**
   d. Enter the cabinet and rail placement information for the comm panel. **Required**
   e. If needed, enter notes for the comm panel.
   f. Create comm panel ports, if needed. See ***Creating Ports*** (on page 97).
5. Complete all relevant Detail 2 information if needed:
   a. Enter notes.
   b. Enter maintenance and support information.
   c. Complete custom user fields (if applicable).
6. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.
7. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

UPS

To add an UPS:

1. From the Explorer menu, select Power Items > UPS.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.
   a. Enter a name for the UPS. **Required**
   b. Select a make and model for the UPS. **Required**
   c. Select the UPS bank the UPS belongs to or add a new bank for it. **Required**
   d. Complete the UPS Specifications fields in order to add a UPS bank. To add a UPS bank:

   Note: The bank must match the specifications of an existing UPS in bank. If empty, the specs of the single UPS are used.

   - Click Add.
   - Enter a name for the bank.
   - Click Save. Select the UPS bank and click Edit to make changes as needed.
5. Create ports as needed. See ***Creating Ports*** (on page 97).
6. Complete all relevant Detail 2 information if needed:
   a. Enter notes.
   b. Enter maintenance and support information.
   c. Complete custom user fields (if applicable).
7. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.
8. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

PDUs

You cannot create a floor PDU unless you already have a UPS and a bank setup since it sets the input voltage and wiring fields. You can create a breaker board without setting bank. See ***UPS*** (on page 93).

To add a PDU:

1. From the Explorer menu, select Power Items > PDU.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. Enter a name for the PDU. **Required**
5. Select the make and model of the PDU. **Required**
6. Select the UPS bank the PDU belongs to. **Required**
    a. In the PDU Specification section of the page, enter the kVa rating and enter the amps of the input breaker.
    b. Click Create in the Breaker Board Information section of the page. The Create Ports dialog appears.
    c. Select or enter the location of the board. Once selected, the label will be applied automatically. The label must be unique to the PDU.
    d. Select the phase. Once selected, a diagram of the selected phase displays in the dialog.
    e. Select the phase voltage.
    f. Select the maximum amps.
    g. Select the number of poles and the pole numbering to create for the panel.
    h. Click Create Panel and the click Close.
    i. Once the breaker panel is added, it is displayed in the Breaker Board Information section of the page. Use the Breaker Pole and Breaker Rating drop-downs to make connect
7. Create any breaker board information (if needed):
8. Create ports as needed. See ***Creating Ports*** (on page 97).
9. Complete all relevant Detail 2 information if needed:
    a. Enter notes.
    b. Enter maintenance and support information.
    c. Complete custom user fields (if applicable).

10. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.
11. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Outlets

To add an outlet:

1. From the Explorer menu, select Power Items > Outlets.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.
   a. A default power outlet ID is applied but can be changed by entering a new power outlet ID.
   b. Select a make and model.
   c. Assign the outlet to a cabinet.
5. Create ports as needed. In order to create ports, the make and model, UPS bank, PDU/breaker panel and PDU breaker number in the Power Outlet Information section of the page need to be selected. See ***Creating Ports*** (on page 97).
6. Complete all relevant Detail 2 information if needed:
   a. Enter notes.
   b. Enter maintenance and support information.
   c. Complete custom user fields (if applicable).
7. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.
8. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Rack PDUs

To add a rack PDU:

1. From the Explorer menu, select Power Items > Rack PDU.
2. Select Add from the Page Mode drop-down in the toolbar.

3. Select Add a New Item from the Actions drop-down in the toolbar.
4. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.
   a. Enter the rack PDU ID.
   b. Select the make and model.
   c. Assign the PDU to cabinet and rail position.
   d. Select the cabinet side.

   Note: Two vertical mounted rack PDUs are supported per cabinet.
5. Create ports as needed. See ***Creating Ports*** (on page 97).
6. Complete all relevant Detail 2 information if needed:
   a. Enter notes.
   b. Enter maintenance and support information.
   c. Complete custom user fields (if applicable).
7. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.
8. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

CRAC Units

To add a CRAC unit:

1. From the Explorer menu, select Environ. Items > CRAC.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.
   a. Enter a name for the CRAC.
   b. Select the make and model of the item.
   c. Enter the capacity of the CRAC unit.
   d. Select the CRAC group the unit belongs to. The CRAC group must match the specifications of an existing group. If empty, the specs of the single unit are used.
5. Create ports as needed. See ***Creating Ports*** (on page 97).
6. Complete all relevant Detail 2 information if needed:

a. Enter notes.

b. Enter maintenance and support information.

c. Complete custom user fields (if applicable).

7. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.
8. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Probes

To add a probe:

1. From the Explorer menu, select Environ. Items > Probe.
2. Select Add from the Page Mode drop-down in the toolbar.
3. Select Add a New Item from the Actions drop-down in the toolbar.
4. At a minimum, complete all of the required fields on the Detail 1 page. Complete additional fields as needed.

   a. Enter the probe name.

   b. Select the make and model.

   c. Select the cabinet and rail position of the probe.
5. Create ports as needed. See ***Creating Ports*** (on page 97).
6. Complete all relevant Detail 2 information if needed:

   a. Enter notes.

   b. Enter maintenance and support information.

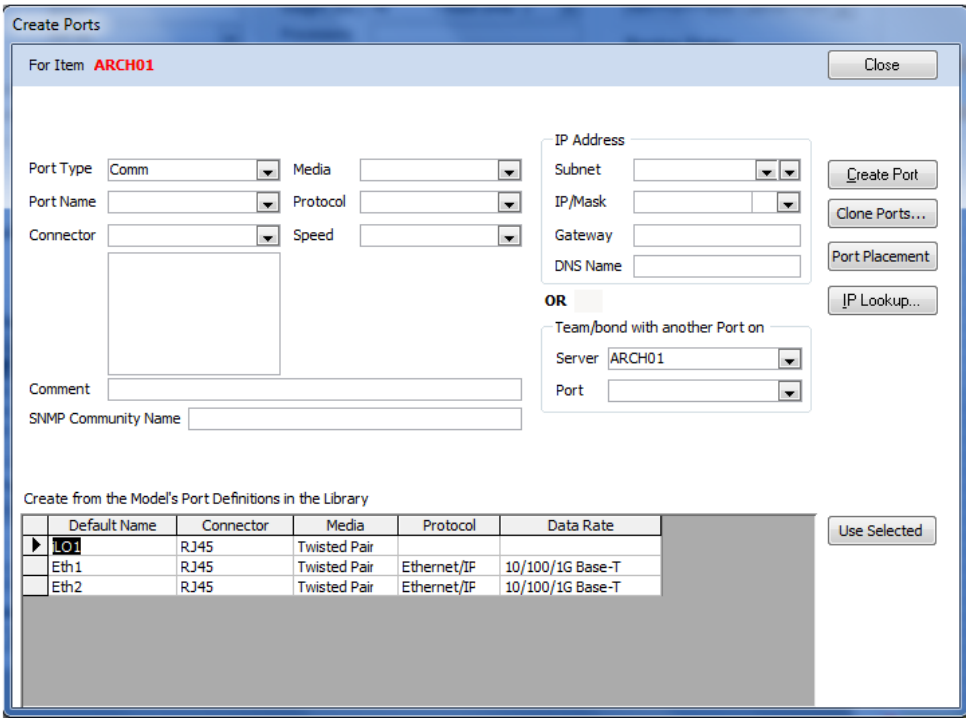
   c. Complete custom user fields (if applicable).
7. Click Save. The saved item is tagged with a status of Unapproved. The item appears in red on the cabinet elevation, which indicates that the item has a Unapproved status or is an outstanding request.
8. To submit a request for approval, select Submit New Item Request from the Actions drop-down. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Creating Ports

When you add ports, you are adding them to a specific item. Ports can be added to an item when the item is initially added to dcTrack or after it has been added. The information you enter when creating a port depends on the type of port you are creating - comm or power.

Comm Ports

In addition to creating power ports from scratch, you are able to clone existing ports and apply them to the item. See ***Cloning Ports (without Cloning Items)*** (on page 108). The information in this topic refers to creating comm ports for all items except network items and comm panels. See ***Network Comm Ports*** (on page 101) and ***Comm Panel Comm Ports*** (on page 102).



Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To create a port for an existing item:

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.
3. Click Create Ports in the Comm Ports section of the page. The Create Ports dialog appears.
4. Select Comm from the Port Type drop-down.
5. Create the port manually or select it from the Model's Port Definition Library list:
   a. Create the port manually:

- Select or enter the port name in the Port Name drop-down. **Required**
- Select the connector, media, protocol and speed. **Required**

Or

a. Select a port from the library:

- If the port is available in the Port Library, it is displayed in the "Create from the Model's Port Definition in the Library" list at the bottom of the dialog. Select the appropriate port.
- Click Use Selected.

6. If needed, add an IP address or team the port with another, existing port:

   a. If necessary, assign an IP address to the comm port. Enter the IP address or use IP Lookup to find an IP address. Alternatively, IP address assignment can be done later from the IP Address dialog. See ***Assigning, Editing and Deleting Port IP Addresses*** (on page 109).

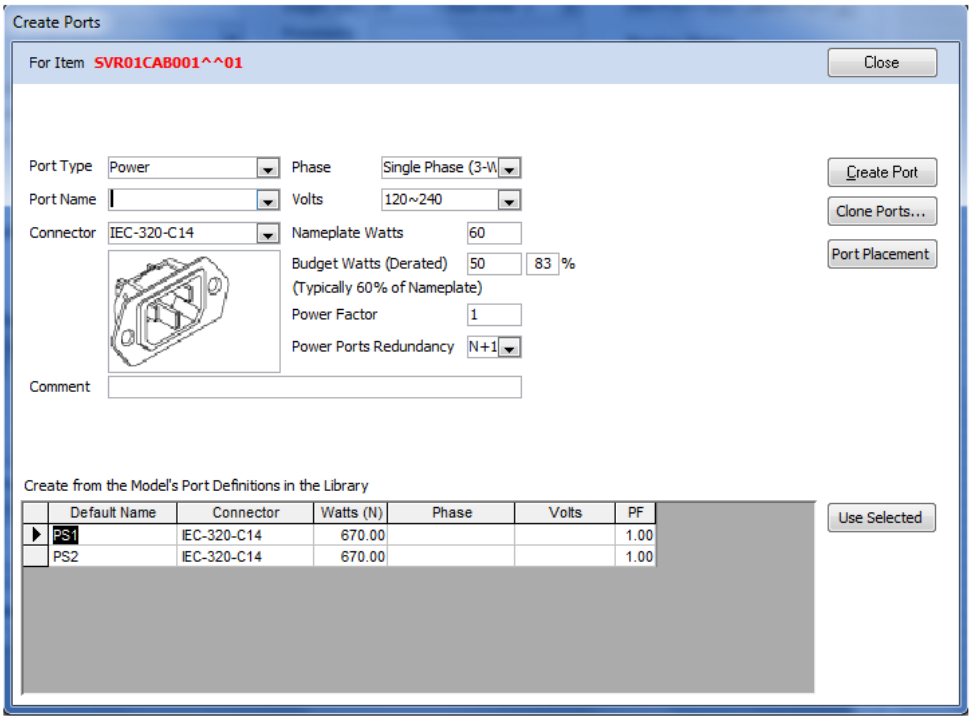
   Or

   b. Select the server and port associated with the port you want to team the port you are creating with.

7. If needed, enter comments pertinent to the port.
8. If needed, enter the SNMP community name the port will be associated with.
9. Click Port Placement to open the a dialog containing the front and rear view of the device you are adding the port to. From this dialog, you can define the location of the ports on the equipment. See ***Port Placement*** (on page 106) for more details on this function.
10. Click Create Port. If needed, continue creating additional ports.
11. Once all ports are created, click Close.

Power Ports

In addition to creating power ports from scratch, you are able to clone existing ports and apply them to the item. See ***Cloning Ports (without Cloning Items)*** (on page 108).



Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To create a port for an existing item:

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.
3. Click Create Ports in the Comm Ports section of the page. The Create Ports dialog appears.
4. In the Create Ports dialog, select the Power from the Port Type drop-down.
5. Create the port manually or use a port from the Model's Port Definition Library:
   a. Create a port manually:

- Select or enter the port name in the Port Name drop-down. **Required**
- Select the connector, media, protocol and speed. **Required**

a. Select a port from the library:

- If the port is available in the Port Library, it is displayed in the "Create from the Model's Port Definition in the Library" list at the bottom of the dialog. Select the appropriate port.
- Click Use Selected.

6. If necessary, assign an IP address to the comm port. Enter the IP address or use IP Lookup to find an IP address. Alternatively, IP address assignment can be done later from the IP Address dialog. See ***Assigning, Editing and Deleting Port IP Addresses*** (on page 109).
7. Click Port Placement to open the a dialog containing the front and rear view of the device you are adding the port to. From this dialog, you can define the location of the ports on the equipment. See ***Port Placement*** (on page 106) for more details on this function.
8. Continue adding additional ports, if needed.
9. Click Create Port.
10. Once all ports are created, click Close.

Network Comm Ports

This information applies only to creating comm ports for network items. For information on creating ports for all other items, see ***Comm Ports*** (on page 98).

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To create comm ports for network items:

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.
3. Click Create Ports in the Comm Ports section of the page. The Create Ports dialog appears.
4. Create the port manually or select it from the Model's Port Definition Library list:

   a. Select Comm from the Port Type drop-down. **Required**

   b. Enter the number of ports to create. **Required**

c. Select the connector type from the "Connection for all ports" drop-down. Once selected, an image of the connector will be displayed.

d. Select the media, protocol and speed.

e. Select the port name.

f. Enter the number you want to begin numbering ports at.

Or

g. Select a port from the library:

- If the port is available in the Port Library, it is displayed in the "Create from the Model's Port Definition in the Library" list at the bottom of the dialog. Select the appropriate port.
- Click Use Selected. If additional information needs to be entered that was not entered when the port was selected from the library, enter it as needed.

5. If necessary, assign an IP address to the comm port. Enter the IP address or use IP Lookup to find an IP address. Alternatively, IP address assignment can be done later from the IP Address dialog. See ***Assigning, Editing and Deleting Port IP Addresses*** (on page 109).
6. Click Port Placement to open the a dialog containing the front and rear view of the device you are adding the port to. From this dialog, you can define the location of the ports on the equipment. See ***Port Placement*** (on page 106) for more details on this function.
7. Click Create Port. If needed, continue creating additional ports.
8. Once all ports are created, click Close.

Comm Panel Comm Ports

This information applies only to creating comm ports for comm panels. For information on creating ports for all other items, see ***Comm Ports*** (on page 98).

When creating ports for comm panels, you will also be defining the comm panel cabling.

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To create comm ports for comm panels:

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.

3. Click Create Ports in the Comm Ports section of the page. The Create Ports dialog appears.
4. Enter the required information to create the port.
   a. Enter the number of ports/cables you want to create.
   b. Select the media type of the cables.
   c. Select the connector. Once selected, an image of the connector is displayed in the dialog.
   d. Select the far end cabinet the cable connects to from the near end cabinet. The near end cabinet is selected by default but can be changed. The near end and far end cabinets cannot be the same.
5. Complete the remaining fields in the dialog as needed.
6. Click Port Placement to open the a dialog containing the front and rear view of the device you are adding the port to. From this dialog, you can define the location of the ports on the equipment. See ***Port Placement*** (on page 106) for more details on this function. Port placement can also be changed by clicking Port Placement in the Comm Ports section of the Comm Panel page.
7. Click Create Ports and Cables. If needed, continue creating additional ports.
8. Once all ports are created, click Close.

Humidity and Temperature Ports

Humidity ports and temperature ports are added to the following item types as needed:

- UPS
- PDUs
- Rack PDUs
- CRAC units
- Probes

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To add humidity/temperature ports:

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.
3. Click Create Ports. The Create Ports dialog appears.
4. Complete all required fields.
   a. Select the port type and port name.

b. Enter/select the probe location information.

5. If needed, enter comments.
6. Click Create Ports. If needed, continue creating additional ports.
7. Once all ports are created, click Close.

Power Outlet Ports

The following steps apply only to creating ports for power outlets.

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To create power outlet ports:

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.
3. Click Create Ports in the Power Ports section of the page. The Create Ports dialog appears.
4. Enter the required information to create the port or select it from the Model's Port Definition Library list.
   a. The circuit will be selected by default.
   b. Enter or select a port name.
   c. Select a connector. Once selected, an image of the connector will appear in the dialog.

   Or

   d. Select the port from the Model's Port Definition Library list.
5. Select the AWG, if needed.
6. Enter comments, if needed.
7. Click Port Placement to open the a dialog containing the front and rear view of the device you are adding the port to. From this dialog, you can define the location of the ports on the equipment. See ***Port Placement*** (on page 106) for more details on this function.
8. Click Create Ports. If needed, continue creating additional ports.
9. Once all ports are created, click Close.

Rack PDU Ports

In additional to adding ports for rack PDUs, you can also clone existing ports. See ***Cloning Ports (without Cloning Items)*** (on page 108).

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To add ports for rack PDUs:

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.
3. Click Create Ports in the Power Ports section of the page. The Create Ports dialog appears.
4. Select the port type. You can then select an existing port from the Model's Port Definition Library list or enter the required information to create the port manually.
5. To manually create an input cord port:
   a. Select or enter a name for the input cord in the Input Cord field. **Required**
   b. Select a connector. Once selected, an image of the connector is displayed. **Required**
   c. Select the volts and amp rating for the port. The max amps are calculated and applied based on these values. **Required**
   d. Enter comments, if needed.
6. To manually create a receptacle port:
   a. Select a name for the input cord in the Input Cord field. **Required**
   b. Select a receptacle for the port. **Required**
   c. Select a connector. Once selected, an image of the connector is displayed. **Required**
   d. Select the current. The max and amps current values will be calculated based on the selections you make in either of these fields. **Required**
   e. Select the breaker information and enter comments, if needed.
7. To manually create a comm port:
   a. See ***Comm Ports*** (on page 98).
8. To manually create a temperature or humidity port:
   a. See ***Humidity and Temperature Ports*** (on page 103).

9. Click Port Placement to open the a dialog containing the front and rear view of the device you are adding the port to. From this dialog, you can define the location of the ports on the equipment. See ***Port Placement*** (on page 106) for more details on this function.
10. Click Create Ports. If needed, continue creating additional ports.
11. Once all ports are created, click Close.

Port Placement

To place a port on the device image:

1. Click Port Placement to open the a dialog containing the front and rear view of the device you are adding the port to. From this dialog, you can define the location of the ports on the equipment.
    a. Use the Front and Rear buttons to view the front and rear views of the equipment.
    b. Use the port labels to indicate where on the image the port is located. Drag the labels to the correct position using your mouse.
    c. If another device with the same exact model and the same exact port locations already exists in the application, use the Copy From drop-down to select that device and apply that information to the current device.
    d. If there are many ports depicted on the image and they are tightly packed together such that one label covers part of the label next it, click Overlap to change the order in which the labels overlap each other.
    e. When there are many ports (in the case of a network item or a comm panel) and the ports layout has a repeatable pattern, you can use the Auto Arrange feature. To do so, enter the X,Y coordinates:

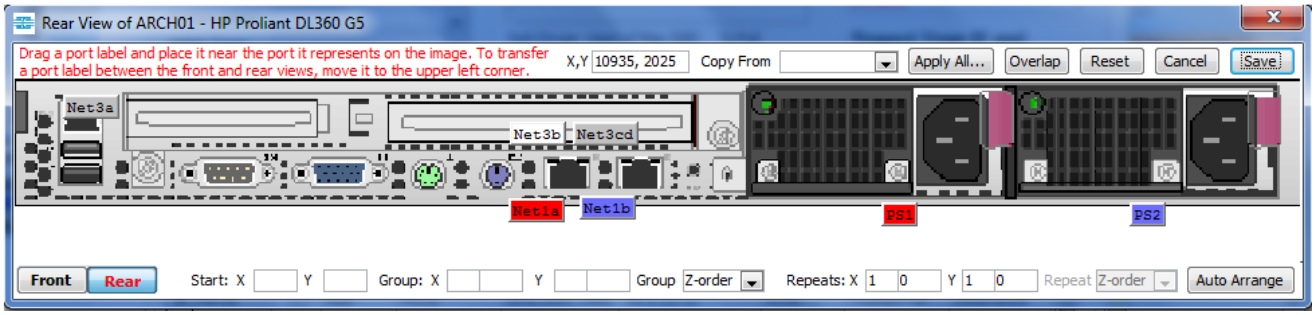
- First, determine from the layout of the ports if they fall in group and this group repeats. Begin by entering the information for the first group of ports:
- Start X and Y. These are the X and Y coordinates for the top-left corner of the first label to be placed.
- Group X: is the number of labels in the group along the horizontal (X) axis and the distance between labels.
- Group Y: is the number of labels in the group along the vertical (Y) axis and the distance between labels.
- Group sort order, is the order in which the labels will be places within the group.
- Repeats X: is the number of times the group will be repeated horizontally and the distance between the left edge of the first label in the first group and the first label in the second group.

- Repeats Y: is the number of times the group will be repeated vertically and the distance between the top edge of the first label in the first group and the first label in the second group.
- Repeat sort order is the order in which the groups will be repeated.
- Click the Auto Arrange button after filling out all the boxes. You can then vary the values entered in some of the boxes and click Auto Arrange to fine tune the placement.
- You can draw a window around a group of labels and then drag one of those labels to a new position to move the select group of labels.

a. To move labels between the front and rear images, drag the label to the top left most position on the image and click Front or Rear. The label is displayed on the opposite face of the item and you can then drag it to its position.

b. Click Apply All... if you want all other items to have the same model as the item you are currently working with to have the same port placement information.

c. Click Save. Alternatively, click Reset to remove the information you have applied or Cancel to close the dialog without applying the port placement information.



Cloning Ports (without Cloning Items)

You are able to clone ports without cloning the items they are associated with. See ***Cloning Items and Their Ports*** (on page 112) for information on cloning items and ports at once.

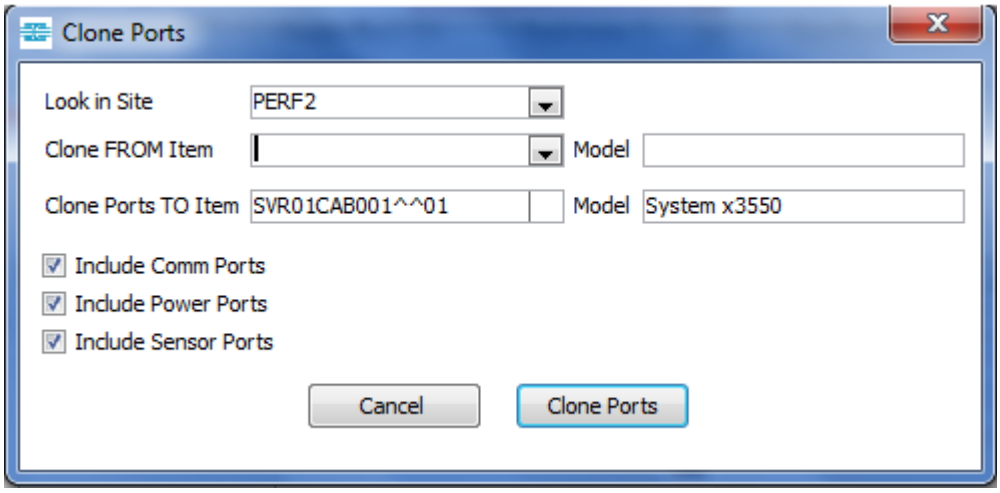
Only a single comm port can be assigned to a rack PDU and these ports are cloned along with the item. Sensor ports are cloned so long as there is not a duplicate sensor with the same name.

Rack PDUs can be cloned as long as power ports are not defined for them. If one or more power ports are defined for rack PDUs, however, the power ports are not cloned along with the rack PDU since power ports are related to each other. By not cloning rack PDU power ports, dcTrack makes sure the power ports are not invalidated if, for example, power cords are changed from single-phase to three-phase.

To clone a port (without cloning items):

1. Select the item from the List page.
2. Select Edit from the Page Mode drop-down.
3. Click Create Ports in the Comm Ports section of the page. The Create Ports dialog appears.
4. Select Comm or Port from the Port Type drop-down depending on the type of port you are creating.
5. Click Clone Ports… to open the Clone Ports dialog.
6. By default, the "Look in Site" drop-down displays the site that item you selected on the List page is associated with. If you want to clone an item from another site, select the site from the drop-down.
7. The "FROM Item" is the item that the port you are cloning is associated with. By default, the "Clone FROM Item" drop-down contains the name of the item you selected from the List page. If you want to clone the port from another item, select the item from the drop-down.
8. The "Clone Ports TO Item" field contains the default name applied to the item based on the "FROM Item" selected in the "Clone FROM Item" drop-down.
9. The Model fields are populated automatically based on the values of the "Clone FROM Item" drop-down and "Clone Ports TO Item" field.
10. Select the type of ports you want to clone: comm ports, power ports and/or sensor ports.

11. Click Clone Ports. This process clones all the ports from the template (source) item to the item that is currently being edited (destination).



Assigning, Editing and Deleting Port IP Addresses

IP addresses can be added to a port either when it is initially added or after it has been added. IP address can also be edited from the IP Space Addresses page. See ***IP Addresses*** (on page 123).

Note: The following steps assume you are editing the item in Edit page mode to customize it. If you are adding an item for the first time, you will be working in Add page mode.

To assign IP addresses:

1. Open the Detail 1 page of the item you want to assign an IP address to.
2. Select Edit from Page Mode drop-down.
3. Click the IP Addresses button. The "Add/Edit IP Addresses for Item:" dialog appears.
4. Click the IP Lookup button to search for an available IP address and to verify whether the IP address or DNS name is live on the network. The IP lookup function performs a live ping and a DNS lookup for the given IP address or name.
5. Assign a new IP address as follows:
   a. Make a selection from the Port Name drop-down or enter a new name for the port to which you wish to assign an IP address.
   b. Enter the IP address in the Address field or select a subnet from the "Find a free IP" drop-down. If this list is empty, see ***Subnets and VLANs*** (on page 117).

Once a subnet is selected, the first available IP address is automatically inserted in the Address field. You can then search for other available IP addresses in the selected subnet using the second drop-down. Making a selection in this list replaces the IP address and overwrite any previous entries in the Address field.

c. The entries for the Mask, Default Gateway and DNS Name fields are completed automatically. You can make changes to these automatic entries.

d. DNS names should be unique but there are some cases where they might not be. Therefore, you are warned if a duplicate is found.

e. Select the Virtual checkbox if this is not the primary IP address for a port. In some instances, virtual IP addresses (more than one IP address) are assigned to a single port (network interface).

f. If needed, enter comments in the Comment field.

6. When all entries are made, click Add to assign this IP address to the port.

To edit an IP address:

1. From the Explorer menu, navigate to the Item Detail 1 page of the item for which you wish to edit IP addresses.
2. Switch the page to Edit page mode.
3. Select the port with the IP address you wish to edit.
4. Select Edit. This populates all the entries in the text and drop-down fields.
5. Make the desired edits and click Update.

To delete an IP address:

1. From the Explorer menu, navigate to the Item Detail 1 page of the item for which you wish to delete an IP addresses.
2. Switch the page to Edit page mode.
3. Select the port with the IP address you wish to delete.
4. Select Delete. This restores the IP address to the database of available IP addresses.

IP Address Teaming (or Trunking)

Port teaming or port trunking is a common practice in which one IP address is assigned to multiple ports (network interfaces).

To team an unassigned port with another port that is already assigned an IP address:

1. From the Explorer menu, navigate to the Item Detail 1 page for the specific item for which you wish to assign or edit IP addresses. From the toolbar, change to the Edit page mode. Note that you cannot assign or edit IP addresses for an Item with an outstanding request.

   In such case a red lock icon is displayed in the toolbar indicating that the item cannot be edited.
2. Next click on IP Addresses to open the Add/Edit IP Addresses for Item dialog.
3. Select the unassigned port from the Port Name drop-down or enter it if it does not exist in the list.
4. Type in the same IP address as the one already assigned to the port you wish to team with. If the IP address you typed matches an already assigned IP address, a confirmation prompt asks you to confirm that you wish to use this port. Click Yes button and then click Add.
5. The two ports are now teamed. Editing one port's IP address also updates the other port's IP address accordingly.

To remove a teamed port:

1. On the Add/Edit IP Addresses for Item dialog, select the port and click Delete.
2. Click Close.

Cloning Items and Their Ports

Cloning allows you to copy items that already exist in the application to use as a template to create new items versus having to create an item from scratch. You can then make changes to the cloned item to customize it. All items can be cloned with the exception of cabinets and comm panels.

New, cloned items have names similar to the item they were cloned from but add a "^^" suffix followed by a sequential number such as Device1^^01. Edit each cloned item name as needed.

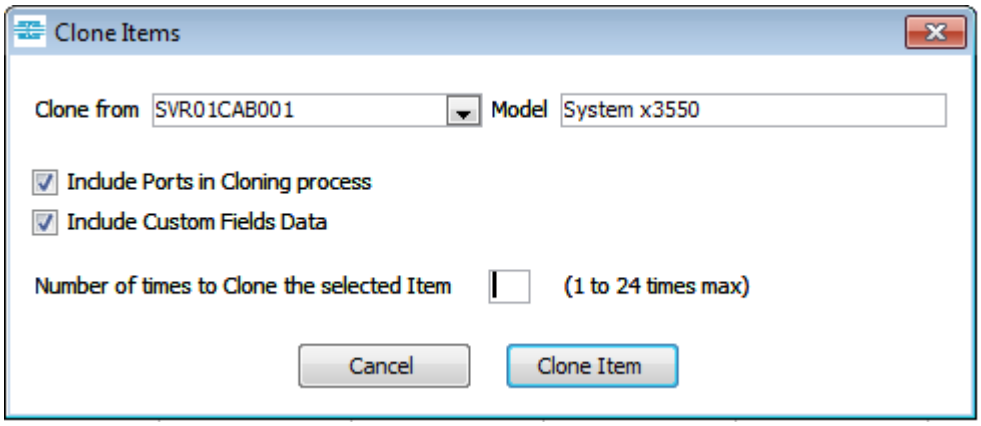
dcTrack allows you to clone ports without cloning the items they are associated with. For example, you can clone the ports associated with a device without cloning the device itself. This is done from the Create Ports dialog. See ***Creating Ports*** (on page 97).

Note: For cloned items, unique fields such as serial number, location, asset tag, and so on are not cloned. Also, if ports were cloned, IP and MAC addresses are not cloned.

To clone items:

1. From the Explorer menu, select IT Items > [Item Class]. For example, IT Items > Device.
2. Select Add from the page mode drop-down.
3. Click Clone . The Clone Items dialog opens.
4. Select the item to be cloned from the 'Cloned from' drop-down. The model is selected based on this selection.
5. Select the 'Include Ports in Cloning process' checkbox to clone the item's ports along with the item.
6. Select the Include Custom Fields Data checkbox to clone the custom fields, if any, which are associated with the item.
7. Enter the number of cloned items to be created based on the original. Up to 24 items can be created based on an existing item.

8. Click Clone Item.



Editing Items

See ***Edit Privileges by Role*** (on page 22) for details on edit privileges for each dcTrack role.

To edit items:

1. From the Explorer menu, select IT Items > [Item Class]. For example, IT Items > Device.
2. From either the List or Detail page, click on the item to be edited and select Edit from the Page Mode drop-down.
3. Edit the item as needed.
4. Click Save.

Audit Trail

Changes to an item's information are tracked in the Audit Trail log. Changes are logged when made in Edit Mode only. While in Add Mode, no changes are logged to the Audit Trail.

If the current item has audit trail results, the results that are displayed are filtered for that current item. If the current item does not have audit trail results, audit trail results for all items are displayed.

You can sort and filter the audit trail results as needed. Click the Advanced button to apply addition Boolean filters to the results.

To view an audit trail:

- From any item page in any page mode, click Audit Trail . The Automatic Audit Trail Log dialog appears.

Getting Item Readings

You are able to retrieve power and sensor readings from device, rack PDU, probe, UPS, PDU and CRAC items by opening the item and clicking on Get Readings in the Power Ports section of the item's Detail 1 page.

In order for readings to be retrieved, these items must be capable of reporting this date over SNMP and the following criteria must be met for the items:

- An IP address and SNMP community string must be assigned to the comm port
- Power ports and/or temperature and humidity sensors must be created for it
- An SNMP MIB must be defined to the item (see ***Creating a SNMP MIB Definition*** (on page 162)).

Submitting Requests

Submitting a New Request

Once an item is added, select Submit New Item Request from the Actions drop-down of the item's Detail page. After the Gatekeeper has reviewed and approved the request, a work order to physically add the item in the data center is generated by the Gatekeeper.

Creating a Discard Item Request

You can discard or decommission items that are no longer used in the data center and, therefore, can be removed from dcTrack.

If the item is a device and it has comm ports and power ports that are already connected, these ports are disconnected as well. Any IP addresses that were assigned to comm ports are released back to the IP subnet address database once the discard process is completed.

Once the request is submitted, the Gatekeeper will review and approve the request and issue a work order. Disconnection work orders must be completed before Item Discard work orders.

If there are several requests to discard items and disconnect comm ports and power port connections, these requests are linked together. Therefore, all requests can be approved at once by approving any one of the associated requests. Once the work order is marked as Complete, the discard process is complete.

To discard (remove) an item:

1. From the Explorer menu, select IT Items > [Item Class]. For example, IT Items > Device.

2. From either the List or Detail page, select Edit from the Page Mode drop-down.
3. Select Discard Item Request from the Actions drop-down.

Creating a Move Item Request

Items can be moved from one cabinet to another cabinet either within the same site or to another site.

To create a move item request:

1. From the Explorer menu, select IT Items > [Item Class]. For example, IT Items > Device.
2. From either the List or Detail page, select Edit from the Page Mode drop-down.
3. Select Move Item Request from the Actions drop-down. The Move page opens.
4. Begin the move process by selecting the new destination site and cabinet from the Destination Information section. The Destination Site drop-down contains the current site by default. Once the Cabinet drop-down is selected, select an available rail position from the Rail Position drop-down.
5. Reconnect the device comm ports via patch cords to the available comm panel (cabling patching panel) comm ports. To do this:
   a. Select the device comm port from the Connect drop-down.
   b. Click Select Connection to open the Connection Building page.
   c. Build the connection and click Use Connection Below to save it. For additional information on building connections see ***Connections*** (on page 130).

      Alternatively, if you want to skip reconnecting the port, click Don't Reconnect Port. A Disconnect request is then created for the port at the item's source location and it is not get reconnected after the item is moved to the destination location.
   d. Finally, if you wanted the connection for the port to remain on the same network port after it is moved, define the new cabling portion of the connection. When you reach the endpoint for the network port, click Keep Current Port. The network endpoint is filled in with the same network port that the device comm port is already connected to.

      Repeat this step for every device comm port in the drop-down. You can skip reconnecting all comm ports at the destination by selecting the Skip checkbox in the Device Comm Port section of the page.

6. Reconnect the device power ports (power supplies) via power cords to the available rack PDU power ports or power outlet ports. To do this:

   a. Select the device power port from the Connect drop-down. This is the port that the near-end of the power cord is to be plugged in to.

   b. Select the rack PDU power port or power outlet port from the drop-down. This is the port that the far-end of the power cord is plugged in to.

   c. Click Add. If there is available power in the power path of the selected port, the connection is accepted and added to the list. If power is not available, the connection is denied and you must choose a different port in the rack PDU or a different rack PDU. If none are found, you may need to choose a different cabinet.

   Repeat this step for every device power port listed in the drop-down. You can skip reconnecting the power ports at the destination by selecting the Skip checkbox in the Device Power Ports section of the page.

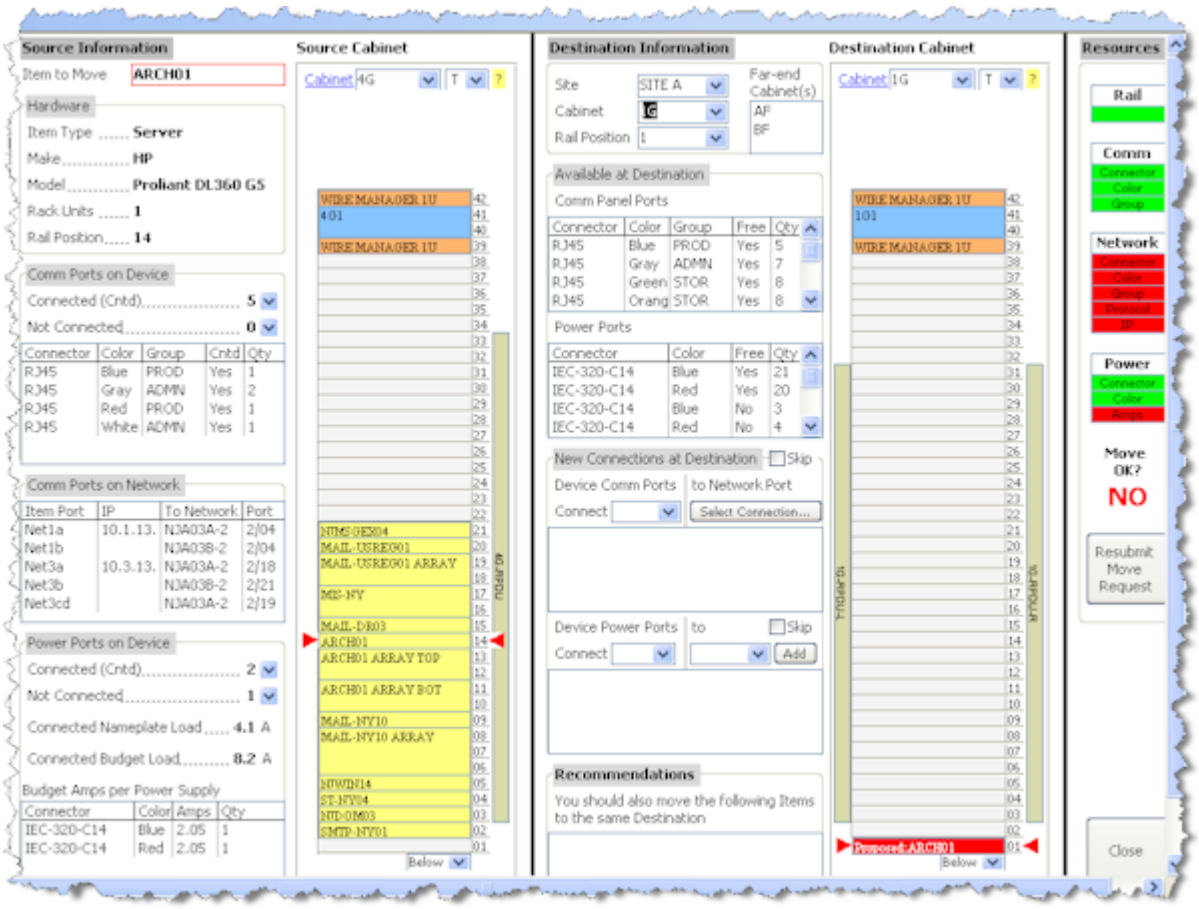
7. In the far right section of the page, the Resource indicators display whether the requested move has all the required resources. The following indicators must be green for the move to be allowed:

   - Rail
   - Comm connector
   - All network indicators
   - Power Connector and Amps

   The following indicators are not required to be green. When they are yellow, the match in the destination cabinet has not been found. However, this is only a warning and you can proceed without the availability of that resource.

- Comm port color code and group
- Network port color code and group
- Power port color code.

When any of the indicators is gray, the recourses are not applicable and do not affect whether the move is allowed or not. For example, if the device you are moving does not have any comm ports or you elected to skip all the comm ports, the comm port indicators and network port indicators are gray.



IP Space

Subnets and VLANs

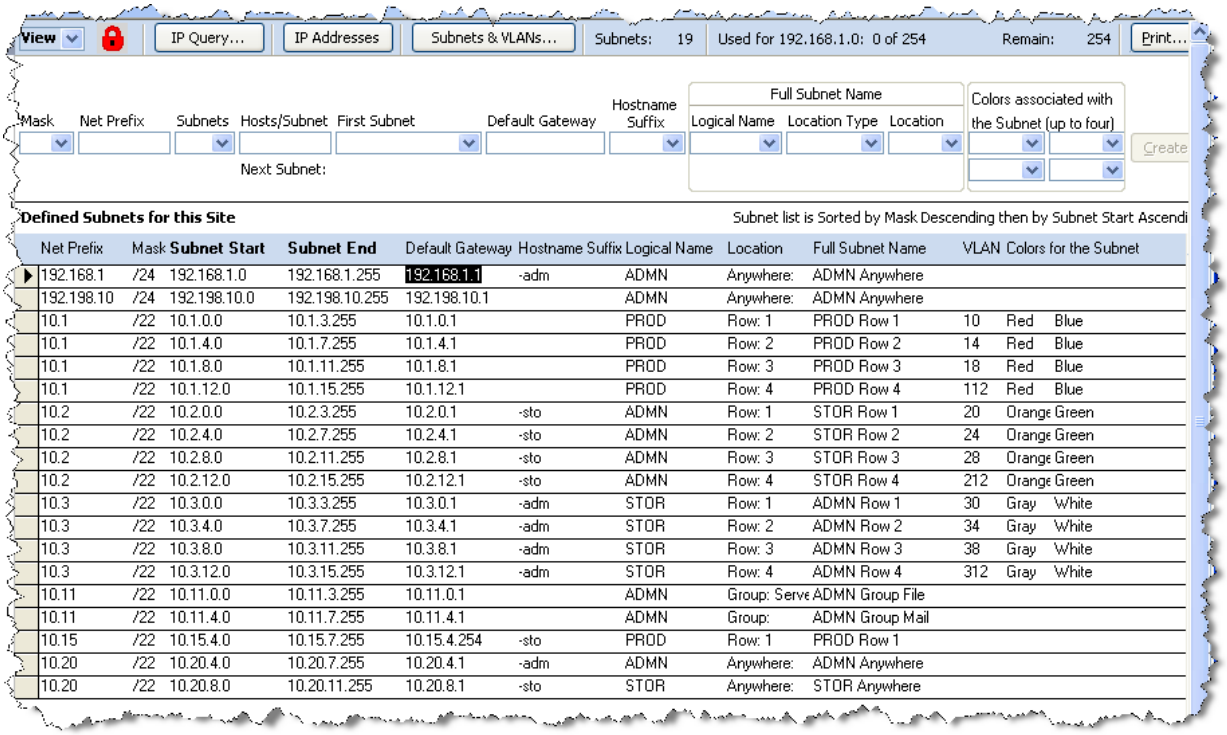
Subnets can be applied to network items in dcTrack.

Adding, Editing and Deleting Subnets

To add a subnet:

1. Select IP Space > Subnets. The Subnets page opens.
2. Select Add from the Page Mode drop-down.
3. Make the appropriate selection for the new subnet from the Mask drop-down.
4. Enter the network prefix in the Net Prefix field.
5. From the Subnets drop-down, select the quantity of subnets you want to create. The number of subnets are limited to the maximum possible number of subnets based on the mask selection.
6. The Hosts/Subnet field provides the total number of hosts (or IP addresses) that can be created for each subnet.
7. The first Subnet drop-down provides the address of the first subnet to be created. You can edit the first octet after the network prefix. The fourth octet must always be 0. For example, if the network prefix is two octets, then you can type over the third octet if that address is not in the list.
8. The entry in the Default Gateway field is created automatically but you can edit it as needed.
9. The DNS Suffix entry can remain blank. If a selection is made from the drop-down, the value is appended to the name of the server that is assigned an IP address from this subnet. If this drop-down is empty, ask the Gatekeeper to provide selections and then select the DNS Suffix List.
10. Making a selection form the Logical Name drop-down is optional but highly recommended since it is a way to identify the subnet's purpose or function. If this drop-down is empty, ask the Gatekeeper to provide selections and then select the Subnets/VLANs.
11. The Location Type drop-down can only be completed after a selection is made from the Logical Name drop-down. This list is used in conjunction with the Location drop-down and it limits the item locations that can be assigned IP addresses from the subnet. If Group is selected and the Location drop-down is empty, ask the Gatekeeper to provide selections and then select the Cabinet Groupings. If Row is selected and the Location drop-down is empty, then you have not specified the row label entry for any of the cabinets on the IT Items Cabinet page.
12. Each subnet can be associated with up to four colors for identification purposes.

13. When all fields have been completed, click Create. If a duplication or overlap in the entries is detected, no subnets are created. You must make the necessary adjustments to remove the duplication.


View
IP Query...
IP Addresses
Subnets & VLANs...
Subnets: 19
Used for 192.168.1.0: 0 of 254
Remain: 254
Print...
Mask
Net Prefix
Subnets
Hosts/Subnet
First Subnet
Default Gateway
Hostname Suffix
Full Subnet Name
Logical Name
Location Type
Location
Colors associated with the Subnet (up to four)
Create
Next Subnet:
Defined Subnets for this Site
Subnet list is Sorted by Mask Descending then by Subnet Start Ascendi
Net Prefix Mask Subnet Start Subnet End Default Gateway Hostname Suffix Logical Name Location Full Subnet Name VLAN Colors for the Subnet
192.168.1 /24 192.168.1.0 192.168.1.255 192.168.1.1 -adm ADMN Anywhere: ADMN Anywhere
192.198.10 /24 192.198.10.0 192.198.10.255 192.198.10.1 ADMN Anywhere: ADMN Anywhere
10.1 /22 10.1.0.0 10.1.3.255 10.1.0.1 PROD Row: 1 PROD Row 1 10 Red Blue
10.1 /22 10.1.4.0 10.1.7.255 10.1.4.1 PROD Row: 2 PROD Row 2 14 Red Blue
10.1 /22 10.1.8.0 10.1.11.255 10.1.8.1 PROD Row: 3 PROD Row 3 18 Red Blue
10.1 /22 10.1.12.0 10.1.15.255 10.1.12.1 PROD Row: 4 PROD Row 4 112 Red Blue
10.2 /22 10.2.0.0 10.2.3.255 10.2.0.1 -sto ADMN Row: 1 STOR Row 1 20 Orange Green
10.2 /22 10.2.4.0 10.2.7.255 10.2.4.1 -sto ADMN Row: 2 STOR Row 2 24 Orange Green
10.2 /22 10.2.8.0 10.2.11.255 10.2.8.1 -sto ADMN Row: 3 STOR Row 3 28 Orange Green
10.2 /22 10.2.12.0 10.2.15.255 10.2.12.1 -sto ADMN Row: 4 STOR Row 4 212 Orange Green
10.3 /22 10.3.0.0 10.3.3.255 10.3.0.1 -adm STOR Row: 1 ADMN Row 1 30 Gray White
10.3 /22 10.3.4.0 10.3.7.255 10.3.4.1 -adm STOR Row: 2 ADMN Row 2 34 Gray White
10.3 /22 10.3.8.0 10.3.11.255 10.3.8.1 -adm STOR Row: 3 ADMN Row 3 38 Gray White
10.3 /22 10.3.12.0 10.3.15.255 10.3.12.1 -adm STOR Row: 4 ADMN Row 4 312 Gray White
10.11 /22 10.11.0.0 10.11.3.255 10.11.0.1 ADMN Group: Serve ADMN Group File
10.11 /22 10.11.4.0 10.11.7.255 10.11.4.1 ADMN Group: ADMN Group Mail
10.15 /22 10.15.4.0 10.15.7.255 10.15.4.254 -sto PROD Row: 1 PROD Row 1
10.20 /22 10.20.4.0 10.20.7.255 10.20.4.1 -adm ADMN Anywhere: ADMN Anywhere
10.20 /22 10.20.8.0 10.20.11.255 10.20.8.1 -sto STOR Anywhere: STOR Anywhere

To edit a subnet:

Note: The Mask, Subnet Start and Subnet End fields cannot be edited. If these values must be removed or changed, the subnet must be deleted and a new one created.

1. From the toolbar, select Edit from the Page Mode drop-down.
2. From the list of subnets in the "Defined Subnets for this Site" list, click on the subnet you want to edit. Editable values appear in the text fields and drop-downs.
3. Make changes as needed and click Update.

To delete a subnet:

1. From the toolbar, select Edit from the Page Mode drop-down.
2. From the list of subnets in the "Defined Subnets for this Site" list, click on the subnet you want to delete.
3. Click the Delete button. A subnet cannot be deleted if the IP addresses of the corresponding subnet have already been assigned to items. Only one subnet can be deleted at a time.

Adding and Removing Item Subnets (from the Subnets and VLAN Management Dialog)

Use the Subnet and VLAN Management dialog to build associations between network switches, or associations between blades in a chassis switch and subnets. If a desired switch is not in the list of switches, make sure the OSI field for that switch is set to Layer 2.

The Subnet and VLAN Management dialog can be accessed from three areas in dcTrack:

- An IT item's network Detail 1 page by clicking on the Subnets & VLANs button.
- The IP Space Subnets page by clicking on the Subnets & VLANs button.
- The IP Space Addresses page by clicking on the Subnets & VLANs button.

There are two ways to associate equipment and subnets from this dialog:

- Select specific subnets and then add the subnet to additional equipment. Use the "Show Subnets served by selected Equipment" view by selecting its corresponding radio button.
- Select specific equipment and then add additional subnets to it. Use the "Show Equipment serving selected Subnet" view by selecting its corresponding radio button.

You can also remove subnets from equipment or remove equipment from subnets.

To add subnets to equipment:

1. Select IP Space > Subnets. The Subnets page opens.
2. Click the Subnets & VLANs button. The Subnets and VLAN Management dialog appears.
3. Add subnets to equipment:
   a. Leave the "Show Subnets served by selected Equipment" radio button selected.
   b. In the Network Equipment in OSI Layer 2&3 list, select the equipment you want to add the subnet to. If other subnets are already applied to the equipment, they will be displayed in the "Subnets in" list. Use the Shift or Ctrl keys to make multiple selections.
   c. From the All Subnets list, select the subnet you want to add to the equipment and then click the < Add button. The subnet will be added to the equipment and displayed in the "Subnets in" list. Use the Shift or Ctrl keys to make multiple selections.

   Or

4. Add equipment to subnets:
   a. Select the "Show Equipment serving selected Subnet" radio button.
   b. From the All Subnets list, select the subnet you want to add to the equipment. The equipment the subnet is currently associated with (if any) will be displayed in the "Equipment serving Subnet" list. Use the Shift or Ctrl keys to make multiple selections.
   c. In the Network Equipment in OSI Layer 2&3 list, select the equipment you want to add the subnet to and then click the < Add button. The subnet will be added to the equipment and displayed in the "Equipment serving Subnet" list. Use the Shift or Ctrl keys to make multiple selections.

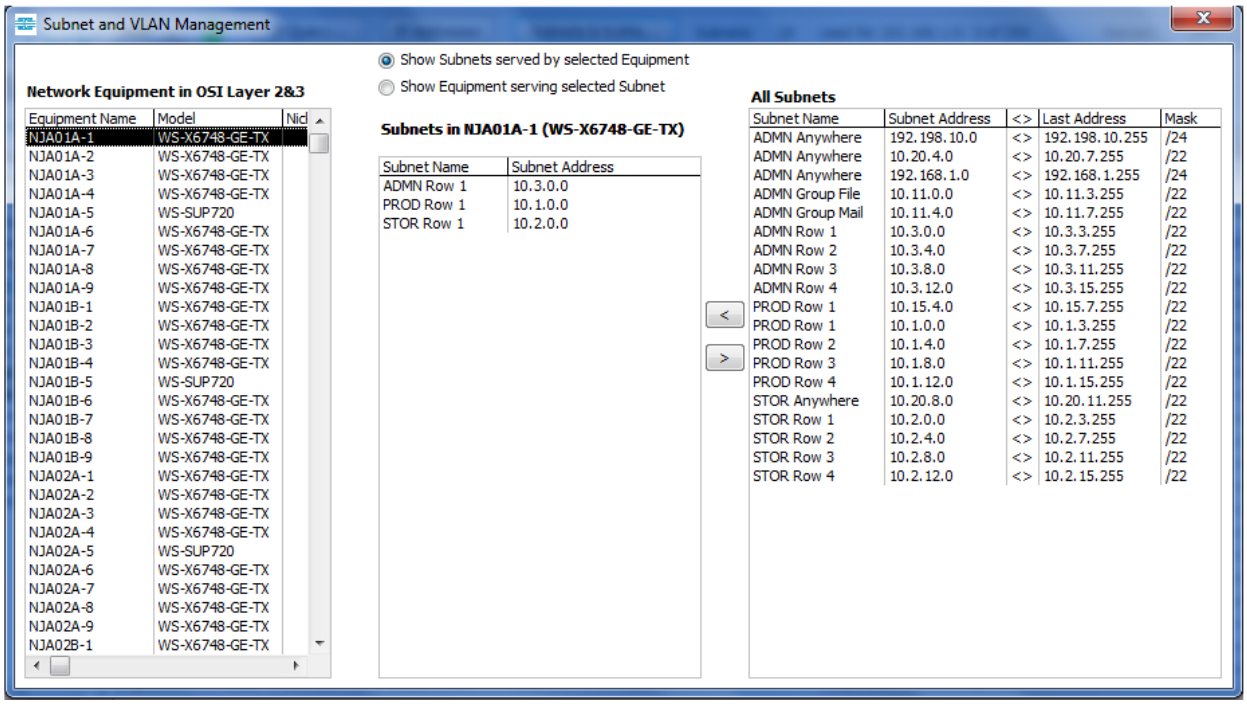
To remove a subnet associations:

1. Remove a subnet from equipment:
   a. Leave the "Show Subnets served by selected Equipment" radio button selected.
   b. To remove an association, select one or more subnet from the list in the middle and click the > button.

   Or

2. Remove equipment from a subnet:
   a. Select the "Show Equipment serving selected Subnet" radio button.

b. To remove an association, select one or more pieces of equipment from the list in the middle and click the < Remove button.



Viewing Existing Subnets and Related Equipment

Subnets can be viewed on the Subnets page in the "Defined Subnets for this Site" section.

To view the relationships between subnets and the equipment they are associated with, click the Subnets & VLANs button on the Subnets page to open the Subnet and VLAN Management dialog. This dialog allows you to view all subnets and the equipment-to-subnet relationships currently maintained in the application, as well as add and remove item subnets. See ***Adding and Removing Item Subnets (from the Subnets and VLAN Management Dialog)*** (on page 120).

Use the "Show Subnets served by selected Equipment" or "Show Equipment serving selected Subnet" radio buttons to change how the relationships between the equipment and subnets are displayed.

Leaving the default "Show Subnets served by selected Equipment" radio button selected displays the subnets that are associated with the piece of equipment selected in the Network Equipment in OSI Layer 2&3 list on the left side of the dialog. The "Show Equipment serving selected Subnet" displays the pieces of equipment that are associated with the selected subnet listed in the All Subnets list on the right side of the dialog.

IP Query

See ***Using Lookup and Ping*** (on page 129).

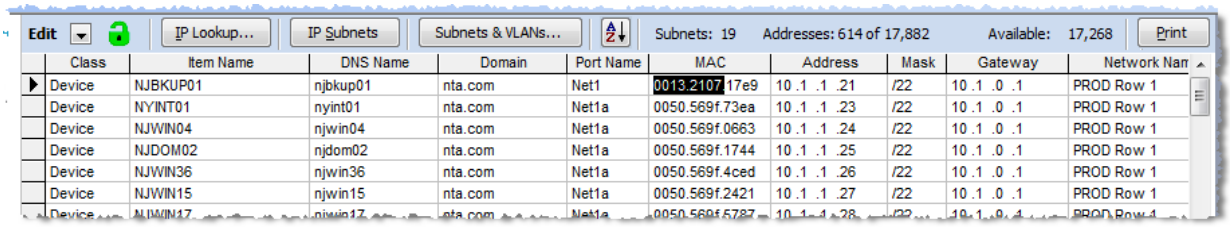
IP Addresses

Editing existing IP addresses is best performed from the an item's Detail 1 page. However, an IP address can also be edited from the IP Space Addresses page.

Editing IP Addresses

To edit an IP address:

1. Select IP Space > Addresses. The IP Address page opens.
2. Select Edit from Page Mode drop-down.
3. Locate the IP address you want to edit and select it.
4. Make the appropriate changes to the following fields:
   a. MAC address
   b. Address
   c. Mask
   d. Gateway
5. Click the IP Lookup button to search for an available IP address and to verify whether the IP address or DNS name is live on the network. The IP lookup function performs a live ping and a DNS lookup for the given IP address or name.
6. Click the IP Subnets button to navigate to the Subnets page or the Subnets & VLANs button to open the Subnets and VLAN Management dialog. See ***Subnets and VLANs*** (on page 117).


Edit
IP Lookup...
IP Subnets
Subnets & VLANs...
Subnets: 19
Addresses: 614 of 17,882
Available: 17,268
Print
Class
Item Name
DNS Name
Domain
Port Name
MAC
Address
Mask
Gateway
Network Nam
Device NJBKUP01 njbkup01 nta.com Net1 0013.2107.17e9 10 .1 .1 .21 /22 10 .1 .0 .1 PROD Row 1
Device NYINT01 nyint01 nta.com Net1a 0050.569f.73ea 10 .1 .1 .23 /22 10 .1 .0 .1 PROD Row 1
Device NJWIN04 njwin04 nta.com Net1a 0050.569f.0663 10 .1 .1 .24 /22 10 .1 .0 .1 PROD Row 1
Device NJDOM02 njdom02 nta.com Net1a 0050.569f.1744 10 .1 .1 .25 /22 10 .1 .0 .1 PROD Row 1
Device NJWIN36 njwin36 nta.com Net1a 0050.569f.4ced 10 .1 .1 .26 /22 10 .1 .0 .1 PROD Row 1
Device NJWIN15 njwin15 nta.com Net1a 0050.569f.2421 10 .1 .1 .27 /22 10 .1 .0 .1 PROD Row 1

DNS Audit

The DNS Audit page allows you to perform an audit in order to update the manually entered DNS names for each server. To do this, dcTrack compares the manually entered values with the live DNS server on your network.

When you click the Begin Audit button, a DNS lookup for each IP address is sent and the received DNS name is compared with the DNS name entered for that IP Address. Once the audit process is complete, you can choose one of three options, as described in this section, to resolve any conflicts.

Performing a DNS Audit

To begin a DNS audit:

1. Select IP Space > DNS Audit.
2. Click Begin Audit. The progress of the audit is tracked in the Pending DNS Requests section of the page.

   The list is updated with the actual DNS name received for each IP address as they come in.

   dcTrack can send up to 90 requests at a time. As each response comes in a new request is sent out. The process is complete once all responses are received or a time out occurs, and the pending requests counter goes back to zero.

   Note: Although the mouse icon does not turn into an hourglass to indicate the process is running, the process is taking place. You can click Cancel to stop the process at any time.

To filter the DNS audit results:

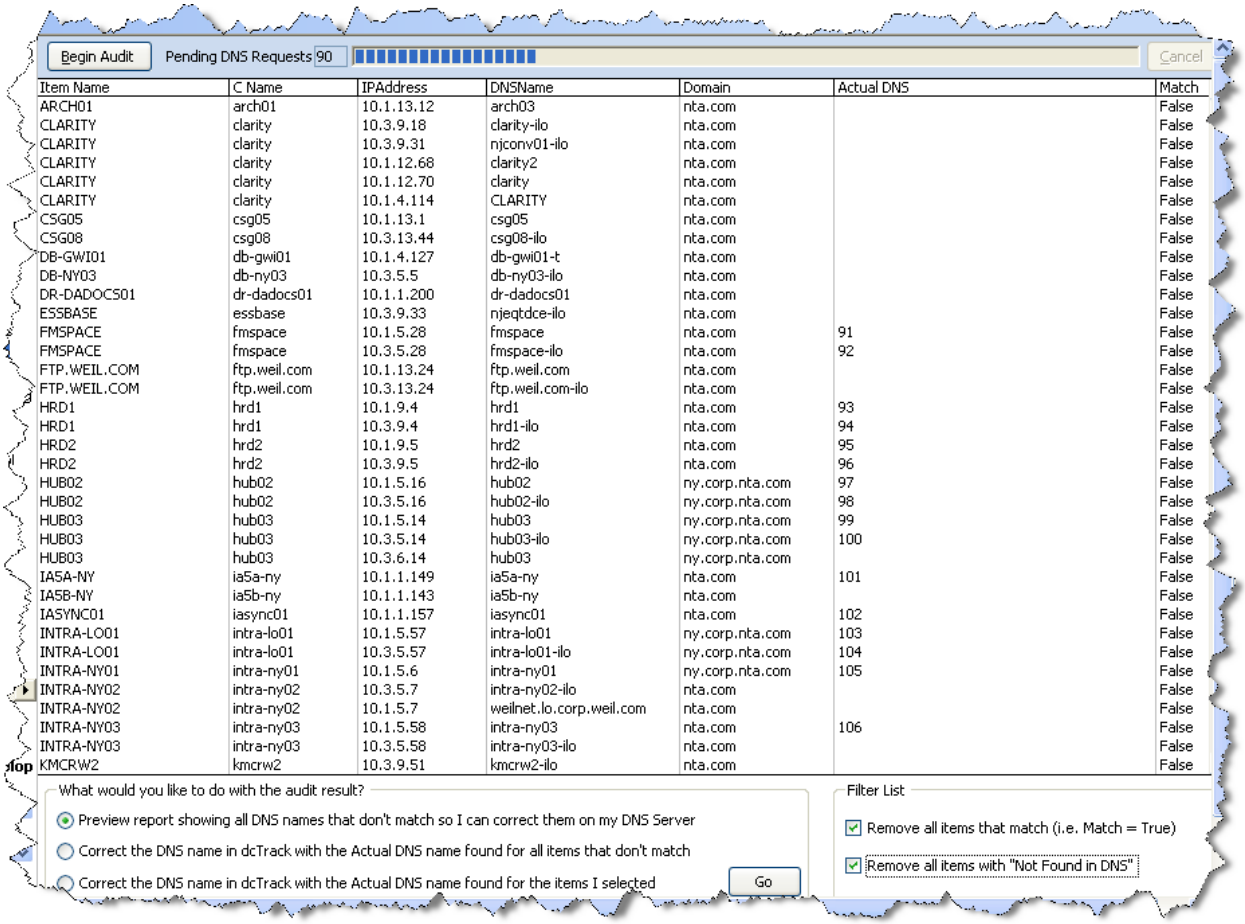
- Select one of the following:
  - Remove all items that match (i.e. Match - True) - These are all of the items that have the expected DNS information and have no issues to be resolved.
  - Remove all items with "Not Found in DNS" - These are items that do not have DNS information associated with them and, therefore, no action needs to be taken.

To resolve DNS issues:

1. Select one of the DNS resolution options provided in the "What would you like to do with the audit results?" section of the page.
   - Preview a report of the issues that have been found. This report can be printed and used as reference when fixing DNS issues.

- If the audit reveals that DNS names have not been found and, therefore, applied to the DNS, you can opt to correct the DNS name with the actual DNS name that was found.
- If the audit reveals that DNS names have not been found and, therefore, applied to the DNS, you can opt to update them based on selections you make.

2. Select an item from the list and click Go. These are the items that are updated. Based on the resolution option you selected, dcTrack makes updates to the DNS data.


Begin Audit
Pending DNS Requests 90
Cancel
What would you like to do with the audit result?
Preview report showing all DNS names that don't match so I can correct them on my DNS Server
Correct the DNS name in dcTrack with the Actual DNS name found for all items that don't match
Correct the DNS name in dcTrack with the Actual DNS name found for the items I selected
Go
Filter List
Remove all items that match (i.e. Match = True)
Remove all items with "Not Found in DNS"

Item Name	C Name	IPAddress	DNSName	Domain	Actual DNS	Match
ARCH01	arch01	10.1.13.12	arch03	nta.com		False
CLARITY	clarity	10.3.9.18	clarity-ilo	nta.com		False
CLARITY	clarity	10.3.9.31	njconv01-ilo	nta.com		False
CLARITY	clarity	10.1.12.68	clarity2	nta.com		False
CLARITY	clarity	10.1.12.70	clarity	nta.com		False
CLARITY	clarity	10.1.4.114	CLARITY	nta.com		False
CSG05	csg05	10.1.13.1	csg05	nta.com		False
CSG08	csg08	10.3.13.44	csg08-ilo	nta.com		False
DB-GWI01	db-gwi01	10.1.4.127	db-gwi01-t	nta.com		False
DB-NY03	db-ny03	10.3.5.5	db-ny03-ilo	nta.com		False
DR-DADOCS01	dr-dadocs01	10.1.1.200	dr-dadocs01	nta.com		False
ESSBASE	essbase	10.3.9.33	njeqtdce-ilo	nta.com		False
FMSPACE	fmspace	10.1.5.28	fmspace	nta.com	91	False
FMSPACE	fmspace	10.3.5.28	fmspace-ilo	nta.com	92	False
FTP.WEIL.COM	ftp.weil.com	10.1.13.24	ftp.weil.com	nta.com		False
FTP.WEIL.COM	ftp.weil.com	10.3.13.24	ftp.weil.com-ilo	nta.com		False
HRD1	hrd1	10.1.9.4	hrd1	nta.com	93	False
HRD1	hrd1	10.3.9.4	hrd1-ilo	nta.com	94	False
HRD2	hrd2	10.1.9.5	hrd2	nta.com	95	False
HRD2	hrd2	10.3.9.5	hrd2-ilo	nta.com	96	False
HUB02	hub02	10.1.5.16	hub02	ny.corp.nta.com	97	False
HUB02	hub02	10.3.5.16	hub02-ilo	ny.corp.nta.com	98	False
HUB03	hub03	10.1.5.14	hub03	ny.corp.nta.com	99	False
HUB03	hub03	10.3.5.14	hub03-ilo	ny.corp.nta.com	100	False
HUB03	hub03	10.3.6.14	hub03	ny.corp.nta.com		False
IA5A-NY	ia5a-ny	10.1.1.149	ia5a-ny	nta.com	101	False
IA5B-NY	ia5b-ny	10.1.1.143	ia5b-ny	nta.com		False
IASYNC01	iasync01	10.1.1.157	iasync01	nta.com	102	False
INTRA-LO01	intra-lo01	10.1.5.57	intra-lo01	ny.corp.nta.com	103	False
INTRA-LO01	intra-lo01	10.3.5.57	intra-lo01-ilo	ny.corp.nta.com	104	False
INTRA-NY01	intra-ny01	10.1.5.6	intra-ny01	ny.corp.nta.com	105	False
INTRA-NY02	intra-ny02	10.3.5.7	intra-ny02-ilo	nta.com		False
INTRA-NY02	intra-ny02	10.1.5.7	weilnet.lo.corp.weil.com	nta.com		False
INTRA-NY03	intra-ny03	10.1.5.58	intra-ny03	nta.com	106	False
INTRA-NY03	intra-ny03	10.3.5.58	intra-ny03-ilo	nta.com		False
KMCRW2	kmcrw2	10.3.9.51	kmcrw2-ilo	nta.com		False

SNMP Auto-Discovery

SNMP auto-discovery discovers servers and other equipment in your data center and uses that information to create those items.

Auto-discovery allows you to scan the network for systems that are SNMP-enabled and uses standards-based MIBs. RFC 1213 MIB (.1.3.6.1.2.1) and Host Resources MIB (.1.3.6.1.2.1.25) are used to collect the following information:

- System name, description, services, uptime
- System network interfaces (ports)
- System RAM and virtual memory
- Disk storage capacity and percent used
- Brand, number and load of system processors
- Installed software and installation date

During a scan, each IP address is pinged in addition to requesting SNMP information from it. This allows you to distinguish between IP addresses that don't exist on the network, and those that do but do not respond to SNMP Get commands. In such cases, when the system responds to a ping but not to the SNMP Get command, the system SNMP settings are not configured properly. Click the Print button to view this information.

Once a scan is complete, the Discovered Systems list is displayed. In this list, when a system sysName matches an item name in dcTrack, Yes is displayed in the Match column. All discovered information for this system is now automatically linked to the matched item.

Selecting a system in the Discovered Systems list, will allow you to view the system's discovered ports, peripherals and installed software depending on which radio button is selected.

When items are created, they are assigned a name and, if applicable, a domain name. During the auto-discovery process, the item's name and domain name, if any, are checked so you don't have to name each absolute domain name individually.

As the process continues, the progress of the process is displayed at the top of the page.

For each item you want to collect data from via SNMP, you will need to create an SNMP MIB. See ***Creating a SNMP MIB Definition*** (on page 162)for information on creating a SNMP MIB.

Using SNMP Auto-Discovery

To use SNMP auto-discovery:

1. Select IP Space > Discovery.
2. Select an IP range to scan:
   - All Defined Subnets - Searches all defined subnets in dcTrack.
   - Selected Subnets - Allows you to choose from a list of subnets available in dcTrack. Use the Shift or Ctrl keys to make multiple selections.
   - Custom Range - Allows you to enter a range of subnets to search between.
3. Set the SNMP options.
   a. SNMP UDP Port - The SNMP by default uses port 161. However, if another SNMP process is running on the same computer as dcTrack, the scan cannot be initiated and you need to enter a different port number. For example, if an SNMP agent is running on the computer in listen mode, that process will block use of the default port by dcTrack.

   Note: If you are not using port 161 as your default on your servers, dcTrack will not be able to communicate with the server on your SNMP capable items.

   b. SNMP Read Community - This name must match the community name setup on the systems throughout the network. Systems with a different community name will not respond to this scan. If the systems are configured with several different community names, you will need to do a scan for each community name.
   c. SNMP Timeout - Enter the amount of time you want the SNMP process to continue trying to detect items before the process times out.
   d. SNMP Version - If the systems are configured with SNMP v3, you must select this SNMP version and enter the username and password. If the items are configured with several different usernames and passwords, you will need to do a scan for each set of credentials.
4. Set the Scan Options. The scanning occurs in several steps.
   a. Auto-scan - Goes through all steps automatically.
   b. Manual Scan - The manual scan requires you to click the Next button after each step is completed. This is intended for debugging in case a system is not responding. This allows you to review the SNMP information collected in a particular step by making selections in the SNMP Packets list and viewing the content in the Response Detail of Selected Packet list.

c. Skip to Previously Discovered Systems - Each time a scan is performed, the discovered systems remain in the history. Therefore, it's possible for a scan to not find any systems in the scanned subnet, yet at the end of the scan the Discovered Systems list will contain entries. In this case, the systems displayed in the list were found by previous scans. You can use the Skip to Previously Discovered Systems radio button option to skip any scanning and proceed to the end result to view results of previous scans.

5. Select the steps to be included in the scan. These steps define what the additional information to look for during the scan:
   a. Step 2: Network Interface
   b. Step 3: System Resources
   c. Step 4: Installed Software
6. Click Start to begin the scan. The progress of the scan is displayed on the page.
7. Once the scan finishes, click Next.
8. Select the systems that did not produce a match. Hold down the Shift or Ctrl keys to make multiple selections from the list.
9. From the drop-down lists under Add Selected Systems, select the site to which these systems need to be added to as well as the item class they belong to.
10. Click the Add button to add all the selected items as New items. If the discovered system includes discovered ports (interfaces), these will automatically be created for the item as ports.
11. You should then proceed to the respective item's Detail 1 page and enter the remaining data for the item such as the make and model, cabinet, and rail position. If the item has ports created for it, you should complete the missing properties for each port, such as connector and media.

Note: IP addresses that were discovered for each port will also be added provided the subnets for these IP addresses were already created.

Using Lookup and Ping

The lookup and ping feature allows you to ping any IP address or name. The ping response time indicates how long it took for the server to respond.

If the IP address does not respond, the response time is 0 or blank. If you ping an IP address and a DNS name is returned, the name is displayed. If you ping a name and a response is received, the IP address of that name is displayed.

If the IP address belongs to an item in the dcTrack database, the item and port names associated with the IP address are provided, as well as information about the subnet that the IP address belongs to.

To ping a server through dcTrack:

1. Select IP Address > Lookup and Ping. The IP Address and Name Lookup dialog opens.
2. Enter the IP address or name of the server you want to look up and ping.
3. Click Find. The results are displayed in the "Ping Response Time in milliseconds" section and Information in dcTrack Database section of the dialog.

You can also access the IP Address and Name Lookup dialog by selecting the IP Query button on the Subnets page, or the IP Lookup button on either the IP Addresses page or DNS Audit page.

IP Lookup searches for an available IP address and to verify whether the IP address or DNS name is live on the network. The IP lookup function performs a live ping and a DNS lookup for the given IP address or name.

Performing a SNMP Walk

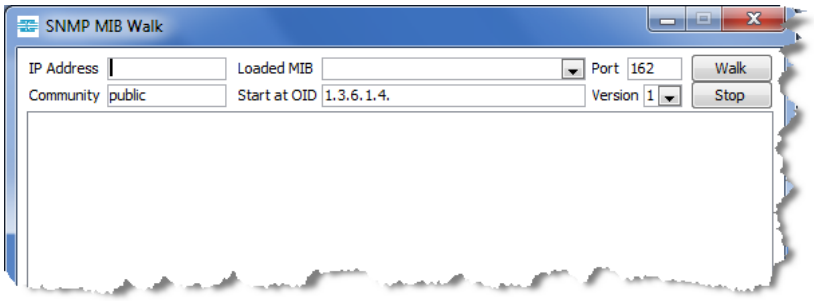
The SNMP Walk tool allows you to capture SNMP data starting at a given object identifier (OID) and every OID after that until the end of the MIB node is reached. SNMP Walk checks both default fields and custom fields.

This is very helpful when setting up the MIB definition because you see the data being returned for a given OID or when the OID data is arranged in a table. You may also use this tool when trying to troubleshoot a device that is not responding to SNMP requests or is not responding properly.

This tool can also be launched from within the Administration > Libraries > SNMP page.

To perform a MIB walk:

1. Select IP Address > SNMP Walk. The SNMP MIB Walk dialog appears.
2. Enter the IP address of the device.
3. Select the MIB library associated with the device. **Optional**
4. Change the port, if needed.
5. Change the community. **Optional**
6. Change the start object ID value. **Optional**
7. Select the SNMP version.
8. Click Walk. Click Stop at any time to stop the process.



Connections

Creating a New Comm Connection

To make comm connections:

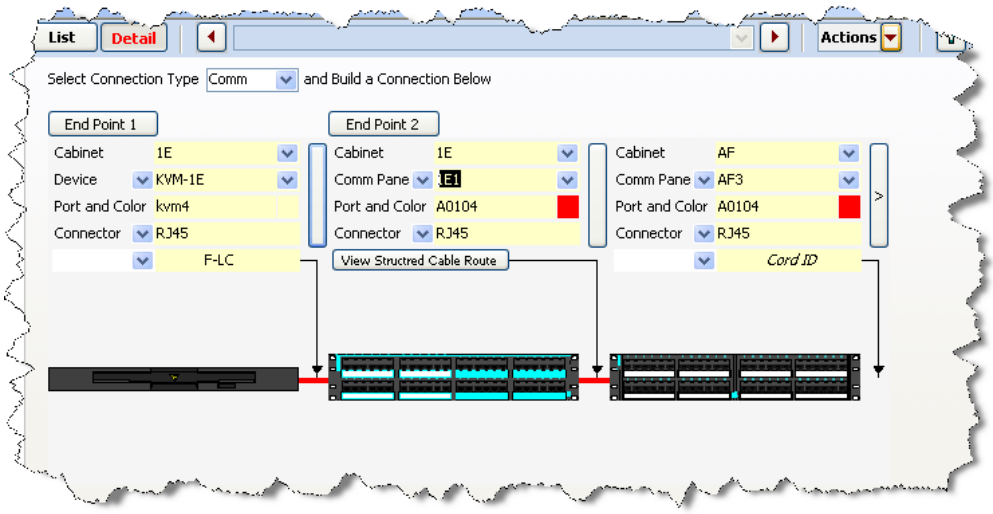
1. Select Connections > New.
2. From the Actions drop-down, select New COMM Connection.

3. Select the cabinet that houses the item port for which you wish to build a connection.
4. Select the item type from the drop-down.

   Note: You cannot start building a connection from item classes such as comm panels.

5. In the Port and Color drop-down, select the specific item port for which you wish to build a connection. The Port and Color field is automatically populated after selecting the item port.
6. The connector drop-down is informational only and provides information about the selected item port. It does not change any attributes of the connection being built. The default selection is Connector.
7. The next drop-down selection is optional. It allows you to define the patch cord type as well as a serial number for the patch cord (if available). Enter the serial number in the Cord ID field box to the far right of the drop-down.
8. Click the Add > button to build the next end point in the connection path.
9. If the next end point (for example, End Point 2) is a comm panel, dcTrack automatically builds the next end point. For example, if the it is End Point 2, dcTrack automatically builds End Point 3. This represents the far-end patch panel, which is linked to the near-end patch panel via structured cabling.
10. If you use color coding to subdivide the network and cabling patch panel ports into logical groupings, dcTrack does an autocheck on the color match between the various connection end points. If the colors do not match, a warning appears. This warning can be ignored if necessary since it does not prevent you from completing the connection.
11. Continue building the next end point until you reach the end of your connection path.

Note: At any point during the connection build process, you can click the End Point button to view the item's Detail page. Also, if any of the end points include a comm panel, you can click the View Structured Cable Route button to view the floor map, which depicts the structured cable route.



Creating a New Power Connection

To make power connections:

1. Select Connections > New.
2. From the Actions drop-down, select New POWER Connection.
3. Under the End Point 1 section, select the cabinet that houses the item port (power supply) for which you wish to build a connection.
4. Next select the item class and then select the specific item port for which you wish to build a connection.

Note: The Item Class drop-down only lists Device and Network. You cannot start building a connection from other item classes such as a rack PDU or power outlets.

5. The third field is automatically populated when selecting the item port in the previous step.
6. The next drop-down is informational only. It does not change any attributes of the connection being built. The default selection is Connector.
7. The next drop-down selection is optional but it allows for the definition of the power cord type as well as a serial number for the power cord if available. Enter the serial number in the Cord ID field box to the far right of the drop-down.

8. Next is to click on the > button to build the next end point in the connection path.
9. If the next end point is a rack PDU or a power outlet, then dcTrack automatically completes the connection all the way up to the circuit breaker.

   Note: If the rack PDU was never connected to a power outlet, the first time you attempt to connect to the rack PDU, you are prompted to build the next end point for the rack PDU. Typically, the next end point is a power outlet.

10. If you use color coding to subdivide the power resources by redundant power sources (for example, A, B, Red, Blue, etc.), dcTrack does an autocheck on the color match between the various connection end points. If the colors do not match, a warning pop-up appears. This warning can be ignored if necessary and it does not prevent you from completing the connection.

    Note: At any point during the connection build process, you can click on the End Point button to view the item's Detail page. Also, if any of the end points include a power outlet, you can click on the View Electrical Cable Route button to view the floor map that depicts the electrical cable route between the outlet and the circuit breaker.

11. If at any point during the connection build process you wish to exit without saving, select Clear Form from the Actions drop-down.
12. When the connection build process is complete, you can either select Save Connection or Save and Add Another from the Actions drop-down.
13. Once the connection is saved, the page is switched to the List page where all New connections are listed.
14. Submit the New connection for approval by selecting Submit Connection Request from the Actions drop-down. The Gatekeeper must review this request. If approved, a work order must be generated by the Gatekeeper to affect this new connection.

Editing Connections

To edit connections:

1. Select Connections > New. The List page contains the connection status in the second column. For the connection to be editable, the value in the Status column must be New.
2. Select the connection to be edited from the List page and either double-click on it or click on the Detail icon.
3. You can make changes to the final end point in the connection path. If you want to make changes to prior end points, you are prompted to clear all the end points downstream from the end point you are currently editing.

4. When connection editing is complete, select Save Connection from the Actions drop-down. This switches the page to the List page where all New connections are listed.
5. Submit the New connection for approval by selecting Resubmit Connection Request in the Actions drop-down. The Gatekeeper must review this request. If approved, then a work order must be generated by the Gatekeeper to affect this new connection.

Disconnecting Connections

To disconnect:

1. Select Connections > New. The List page contains the connection status in the second column. To be able to disconnect a connection, the value in the Status column must be Installed.
2. From the List page, select the connection to be disconnected and select Disconnect from the Actions drop-down. This initiates the request process for the disconnect. The Gatekeeper must review this request. If approved, a work order is generated by the Gatekeeper to disconnect the connection.

Change Control

In order to maintain control of the data in dcTrack and maintain an accurate representation of what is actually installed in the data center, a change control process is used. This process is based on a request and approval system.

Each user is able to filter and view different requests based on their role. The Gatekeeper is the only person authorized to sign off on the completion of a request by marking the work order as Complete. Each time a request is made, an email notification is sent to the Gatekeeper.

Following is the process flow the change control process takes:

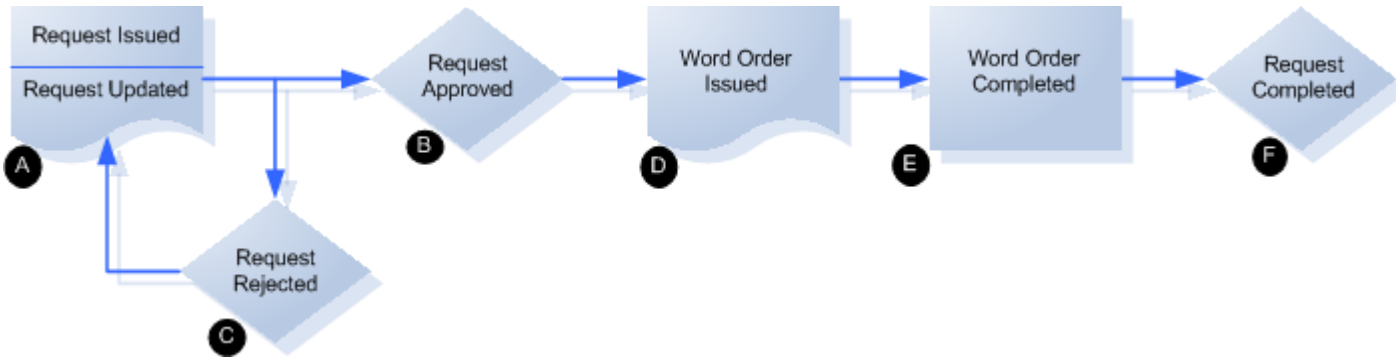


Diagram key	
A	Request Issued/Request Updated
B	Request Approved
C	Request Rejected
D	Word Order Issued
E	Work Order Completed
F	Request Completed

Requests

When you need to make an addition or modification to the data in dcTrack, you submit a request. Requests represent actual activities in a data center such as installing or removing a server, moving a server, connecting a server, and so on.

Once a request is made, it is reviewed and either approved or, if the information is incomplete or incorrect, rejected. Once approved, the request is turned into a work order. For example, if a new server is being installed in the data center, a request is made in dcTrack to add it and then a work order is issued based on that request to perform the actual server installation.

The following information is specific to requests:

Type	Description
Request number	All requests are assigned a request number. The first two digits of the number represent the year the request was made. The next five digits are the serial number of the request. The serial number resets to 00001 each year. When two requests are associated with each other, they have the same request number and a distinguishing suffix. When an item is moved or removed, a request is generated for the item and multiple requests are generated for disconnection and/or reconnection of the item's ports. A related request is assigned a request number that

Type	Description
	includes a suffix consisting of a dash followed by a two-digit serial number starting at 01 to identify the related request. When a single connection is moved, the existing port is disconnected and the new port is connected, which results in a disconnect and a reconnect request pair. Such a disconnect is given the suffix -DX and the reconnect is given the suffix -RX.
Request stage	Each request is given a request stage to identify its current stage in the request process. The workflow flowchart details the stages of the request process and the sequence a request must go through. See ***Change Control*** (on page 134). Requests can be archived only if they are in the Request Completed stage.

To access requests:

1. Select Change Control > Requests.
2. From the Action drop-down, click View Current Requests.

To view a history of the requests that have been made:

- Click View Request History in the Action drop-down.

Approving or Rejecting Requests

To approve or reject requests:

1. Select Change Control > Requests.
2. From the Action drop-down, click View Current Requests.
3. Click on the request and review the request details.
4. To approve the request:
   a. Select Actions > Approve Request.
   b. Click Yes on the confirmation message.
   c. In the Email Account Password dialog, enter your email account password.

   An email is sent to the requester notifying them the request has been approved and the diagram at the bottom of page indicates the request's status as Request Approved.

   A work order can now be created for the request.
5. To reject the request:

a. Click Select > Reject Request.

b. Click Yes on the confirmation message.

c. In the Email Account Password dialog, enter your email account password.

An email is sent to the requester notifying them of the request has been rejected and the diagram at the bottom of page indicates the request's status as Request Rejected.

Marking a Request as Complete

Once the actual request has been completed, for example the server has been installed or removed from the data center, it can be marked as complete.

To mark a request as complete:

1. Select Change Control > Requests.
2. From the Action drop-down, click View Current Requests.
3. Click on the request to mark as complete. If a work order was issued for a request and has been completed, Request Completed is displayed on the process flow diagram at the bottom of the page.
4. Click Action > Mark as Completed.

Request Archiving

To archive a request:

1. Select Change Control > Requests.
2. From the Action drop-down, click View Current Requests.
3. Click on the request.
4. Select Action > Archive Request.

To view archived requests:

- Select Action > View Archived Requests.

To restore requests from the archive:

1. Select Action > View Archived Requests.
2. Click on the request.
3. Click Restore Request from Archive on the Action drop-down.

Requesting a Bypass on Item Detail Pages

The Request Bypass icon opens a dialog that allows you to enable (Yes) or disable (No) the Request Bypass feature. Only the Gatekeeper is allowed to enable the Request Bypass. When enabled, submitting any type of request will cause that request to be immediately completed and passed through all steps of the Change Control process. The full request history and work orders are created as if the request was normally processed.

Work Orders

Work orders are generated from one or more similar requests. A work order contains the information that is necessary in order to physically carry out the request in the data center.

The work order consists of the following information:

Type	Description
Work order number	Each work order is assigned a work order number. The first two digits of the number represent the year the work order was generated. The next three characters are always `WO-` to distinguish the number from a request number. The next five digits are a serial number starting at 00001 each year. When a connection work order is a related to an item work order, both work orders are assigned the same work order number, except that a suffix `-X` is added to the connection work order number.

Work Order Access Levels and Permissions

Role access level	Work order permission
Viewer	Can view Work Orders but cannot mark them Complete.
Member	Can mark work orders that are assigned to themselves as Complete.
Manager	Can mark work orders that are assigned to themselves or to any member of their team as Complete.
Gatekeeper	Can mark any work order Complete.

To view open work orders:

1. Select Change Control > Work Orders.
2. Click on the work order you want to view.
3. Click Actions > Preview Work Order.

To print work orders:

1. Select Change Control > Work Orders.
2. Click on the work order you want to print.
3. Select Actions > Print Word Order.

Marking Work Orders as Complete

Once a work order has been completed, it can be closed. Once it is closed, a notification is sent to the Gatekeeper so they can mark the request as complete.

To mark a work order as complete:

1. Select Change Control > Work Orders.
2. Click on the work order you want to mark as complete.
3. Click Action > Mark Work Order Complete.

Work Order Archiving

To archive work orders.

1. Select Change Control > Work Orders.
2. Click on the work order you want to archive or use Ctrl + click to select several at once.
3. Select Actions > Archive Work Order.

To view archived work orders:

1. Select Change Control > Work Orders.
2. Select Actions > View Archived Work Orders.

Reports

Viewing Reports

There are various reports available in dcTrack and each is viewed in the same way. The steps described here are general and apply to all report types.

Each report contains different information based on the report type. See the individual report topics in this section for details on the information contained in each report.

To view a report:

1. Click Reports and then click on the report you want to view.
2. Select the paper size to apply to the report.
3. Select the items to appear in the report, either Print All or Print Selected. Use Ctrl + click or Ctrl + Shift to make item selections if you are including only selected items in the report.
4. Click Preview Report. The report opens in a secondary window. Right-click on the report and select Print to print it.

Elevations

The Elevations report displays either a text-based or visual representation of the cabinet elevations for the cabinets being monitored in dcTrack.

Report criteria	Description
Print All Cabinets	Selected by default. Generates a report containing all elevations for all cabinets being monitored in dcTrack.
Print Selected Cabinets	Select the specific cabinets that will appear in the report. Use Ctrl + click or Ctrl + Shift to make item selections.
Cabinet View	Specify whether you want the report to display the elevations as text only, or display the front or rear images of the cabinet elevations.

Cab Detail

Like the Elevations report, the Cab Details report displays either a text-based or visual representation of the cabinet elevations for the cabinets being monitored in dcTrack. This report includes addition cabinet details such as the make, model, size, weight, and so on.

Report criteria	Description
Print All Cabinets	Selected by default. Generates a report containing all elevations for all cabinets being monitored in dcTrack.
Print Selected Cabinets	Select the specific cabinets that will appear in the report. Use Ctrl + click or Ctrl + Shift to make item selections.
Cabinet View	Specify whether you want the report to display the elevations as text only, or display the front or rear images of the cabinet elevations.

Cab Resource

The Cab Resource report contains information on cabinets and the resources that are associated with them such as power ports, network equipment reports, data panel ports, and so on.

Report criteria	Description
Print All Cabinets	Selected by default. Generates a report containing all elevations for all cabinets being monitored in dcTrack.
Print Selected Cabinets	Select the specific cabinets that will appear in the report. Use Ctrl + click or Ctrl + Shift to make item selections.
Cabinet View	Specify whether you want the report to display the elevations as text only, or display the front or rear images of the cabinet elevations.

Items

The Items report contains a list of all items being maintained in dcTrack. Additionally, information specific to each item, such as the item type, function, administrator and so on, is captured in this report. This report can be filtered to display information based on criteria you specify.

View Options

Only one view option can be selected at a time.

Report criteria	Description
Hide Ports for All Items	Selected by default. Ports associated with the items are not captured in the report.
Show Ports for each Item	Ports associated with the items are captured in the report.
Show Applications for each Item (Devices Only)	The applications associated with device items are captured in the report.
Show Custom Fields	Any custom fields created for the device is captured in the report. If Show Custom Fields is selected, the Custom User Fields section of the page becomes active. Select the custom fields to include in the report by clicking on them in the Available Custom Fields box and then clicking the Add button. Use the Column Width (in) field to adjust the report column width as needed to accommodate the custom fields. The maximum column width is 9".
Show SNMP Discovered Data	Data for the device that was discovered via SNMP data discovery are captured in the report. If Show SNMP Discovered Data is selected, the Show SNMP Discovered Data Options section of the page becomes active. Select the SNMP discovered data options to include in the report.

Filters

Applying filters allows you to limit the data that is contained in the report. This is useful if you are maintaining a lot of items in dcTrack and would like to limit the time needed to generate the report.

Report criteria	Description
All Data	This is the same as not applying a filter at all. All data for the items being maintained in dcTrack are contained in the report.
Filter per list below	Select this radio button and then select the criteria by which the report should be filtered. Only data that meets the criteria you set are captured in the report. Once you have selected the criteria for the filter, click the Add button to apply it to the report. Click on the filter and then click Remove to remove it.

Sort

Sorting allows you to define how the data in the report is sorted when it is displayed.

Report criteria	Description
Sort on Item Field	The field that is selected is at the root of the sorting order of the report. Selected Ascending or Descending to order the report data. Once you have selected the criteria for the filter, click the Add button to apply it to the report. Click on the filter and then click Remove to remove it.

Item Details

Like the Items report, the Item Details report displays either text-based representations of items or, when available, images of the items being monitored in dcTrack. This report includes addition device details such as the make, model, and so on.

Report criteria	Description
Print All Items	Selected by default. Generates a report containing all devices being monitored in dcTrack.

Report criteria	Description
Print Selected Items	Select the specific devices that appear in the report. Use Ctrl + click or Ctrl + Shift to make item selections.
Cabinet View	Specify whether you want the report to display the devices as text only, or display the front or rear image of the device.
Item Images Per Cabinet Report	Select this if you want to print all items in the currently selected site. The items are sorted by cabinet and ordered from the bottom of the cabinet to the top. Use this report for an initial survey of the site or to perform an audit.

Connections

The Connections report allows you to view connection information for all cabinets (All Connections in Cabinets Report) or specific types of connectors that are connected to specific items (What Connects to an Item Report).

All Connections in Cabinets Report

Report criteria	Description
Print All Cabinets	Selected by default. Generates a report containing all elevations for all cabinets being monitored in dcTrack.
Print Selected Cabinets	Select the specific cabinets to appear in the report. Use Ctrl + click or Ctrl + Shift to make item selections.
Connection Type	Select the type of connection to include in the report. Selecting All includes both Comm and Power connections.

What Connects to an Item Report

Report criteria	Description
Item Class	Select the item type you want to view connections for.
Print All Items	Selected by default. Generates a report containing all items and all connectors to each item.
Print Selected Items	Select the specific items to appear in the report. Use Ctrl + click or Ctrl + Shift to make

Report criteria	Description
	item selections.
Ports	Include or exclude ports from the report.
Connection Type	Select the type of connection to include in the report.

Power

The Power report allows you to view power data for cabinets being monitored in dcTrack.

Report criteria	Description
Power Reports	Selected the power related information to be included in the report.
Print All Cabinets	Selected by default. Generates a report containing all elevations for all cabinets being monitored in dcTrack.
Print Selected Cabinets	Select the specific cabinets to appear in the report. Use Ctrl + click or Ctrl + Shift to make item selections.

Applications

The Applications report contains a list of the applications installed on the servers that are being monitored in dcTrack. You can view the report by application or by server.

Report criteria	Description
Group By	Group the information in the report by application or by server. If Applications is selected, applications are displayed in the selection box. Conversely, if Servers is selected, servers are listed. Select All if you want the report to contain all applications or servers. Choose Selected to select the specific applications or servers to appear in the report. Use Ctrl + click or Ctrl + Shift to make item selections.

snmpTrack Report

The data in the snmpTrack™ report is collected using the snmpTrack Poller. See ***Using snmpTrack Poller*** (on page 161).

Report criteria	Description
SNMP Capable Items • Cabinet Rows • Cabinets • "Items selected here will be plotted"	Use these lists to select the SNMP capable items to be polled for the report.
Readings • Amps • Temperature • Humidity	Select the readings to be taken from the equipment during the SNMP polling.
Duration • All Dates • Date Range	Select All Dates if want the report to continue SNMP readings from the date the equipment was added to the SNMP Poller to the present. Select a specific date range within which to poll for readings.
X-Axis Layout	Use this section to define how the report data will be displayed on the page in the chart. • Minor Tick - Select the number of major tick marks to be used in the report chart and select a time value for them. • Major Tick - Select the number of minor tick marks to be used in the report chart and select a time value for them. • Date/Time Format - The date and time format that will be used in report chart.

Administration

Libraries

dcTrack provides you with default, prepopulated libraries that are used by the application for such things as server models, connector types, equipment manufacturer names, and so on. These libraries can be edited by Gatekeepers to customize them as per your needs.

Updates to the Models library and Connectors library can be made manually by adding and editing items, or items can be imported into dcTrack. See ***Managing the Models and Connectors Libraries*** (on page 148) for more information.

Within libraries, depending on the items they contain, images of the items can be added to make item identification easier.

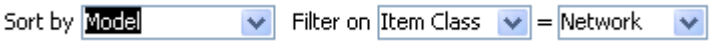
The following libraries are available in dcTrack:

- Models library
- Connectors library
- SNMP library

Filter and Sort Libraries

Both the Models library and the SNMP library can be filtered and sorted based on criteria you select in the Filter by and Sort by drop-downs.

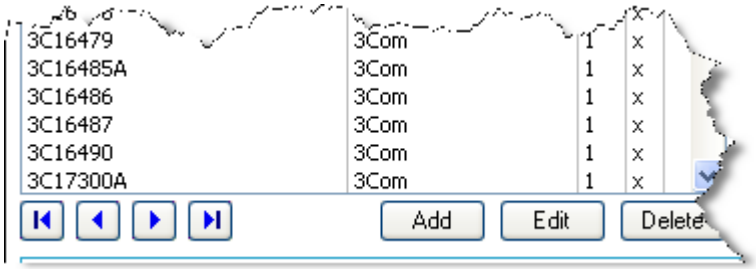
In addition to these criteria, you can define an = variable to the filter and sort criteria. The available = variable selections vary based on the sort by and filter by criteria you select. The selections you apply to the filter and sort criteria are reflected on the page once they are made.



Navigating through Library Items

To navigate through the items in the library:

- Use the First, Previous, Next and Last navigation icons.



Managing the Models and Connectors Libraries

Models Library

The Models library contains all of the models associated with each item class and information on the manufacturers who make the models. For example, all of the network types available in dcTrack, such as CISCO routers, are contained in the Models library.

From the Models library you can view model item details such as item class, manufacturer, item type and so on in the Model Details section of the page. You can also add, edit and view images of the model item, view screw hole locations, comm port and power port details for the item, and view front and rear item image detail information.

Model information can be added manually or imported into dcTrack. Once images are added for items, Test View can be used to review the image in a secondary browser window. Items in the library can also be copied and pasted into other applications. See ***Copying Model and Connector Library Items*** (on page 151).

To access the Models library:

- Select Administration > Libraries > Models.

To view model details:

- Select a model in the left section of the page and the details are displayed in the Model Details section of the page on the right.

To view front and rear image details:

1. Select the model item you want to view image details for.
2. Click the Info buttons in the Front and Rear section of the page.

Connectors Library

The Connectors library in dcTrack contains all of the connector types that can used by items in the data center. From the Connectors library you can view connector details such as type (comm or power), attribute (male, female, plug, receptacle, or jack), and so on in the Connector Details section of the page.

Connectors can be added to the library and existing connectors can be edited or deleted. See ***Adding, Editing and Deleting Model and Connector Library Items*** (on page 150). You can also add, edit and view images of connectors. Once images are added for connectors, they can be copied and pasted into other applications. See ***Copying Model and Connector Library Items*** (on page 151).

dcTrack also allows you to define and edit connectors that are compatible with each other, as well as define and edit connection cords that work with a connector.

To access the Connectors library:

- Select Administration > Libraries > Connectors.

To view connector details and images:

- Select a connector in the left section of the page. The details and an image of the connector (if available) are displayed in the Connector Details section of the page on the right.

To define compatible connectors:

1. From the first drop-down in the Connector Compatibility List section of the page, select the connector you want to define a compatible connector for.
2. In the second drop-down, select the compatible connector.
3. Select the cord used to make the connection.
4. Click Add. The compatible connection information is added to the list of compatible connectors.

To define connection cords for connectors:

1. From the first drop-down box in the Connection Cords section of the page, select the type of connection, either comm or power.
2. Select the color of the cord in the second drop-down.
3. Enter a description of the cord in the text box next to the drop-downs.
4. Click Add. The cord is added to the cord list.

Adding, Editing and Deleting Model and Connector Library Items

To add an item:

1. Select Administration > Libraries > [Library Name].
2. In the library, click Add. The Detail section of the page is now active.
3. Enter or select the model details. The details and required fields for the item vary depending on the model item class or connector item type that is selected.
4. If applicable, use the Paste command to insert front and rear images of the model or connector. To do this:
   a. On your local machine or server, locate the image you want use. Images must be in BMP format.
   b. Copy the image to the Windows® Clipboard.
   c. In dcTrack, click Paste in either the Front or Rear sections of the Add library item page. The Paste Special dialog appears. Click OK.
5. Click Save.

To edit an item:

1. Click on the item to be edited.
2. Click Edit. The Detail section of the page is now active.
3. Make changes as needed and/or update images as needed.
4. Click Save.

To delete an item:

1. Click on the item to be deleted.
2. Click Delete and then click Yes on the confirmation message.

Importing Model Libraries

You are able to import additional models into the Models library. Models are imported from existing libraries stored on your network and provided by Raritan.

Note: The import may take some time to complete depending on the size of the import.

To import models into the Models library:

1. Select Administration > Libraries > Models.
2. Click Import.

3. Use the Browse feature on the Library Import dialog to locate the master library file the model(s) are imported from. Alternatively, select the "Re-import models that I deleted from My Library" checkbox to import only previously deleted models.
4. Click Begin.

Copying Model and Connector Library Items

Items in the Models library and Connectors library can be copied and pasted into other applications such as MS-Word®, PhotoShop®, and so on.

To copy an image:

1. Click on the model you want to copy.
2. Click Copy.
3. Paste the image into the application of your choosing, such as MS-Word, PhotoShop, and so on.

Test Viewing Model Item Images

Once you add images of items to the Models library, use the Test View feature to review the item image.

To use test view:

1. Add an image for an item or select an item that already has an image associated with it.
2. Click the Test View button. The image opens in a secondary browser window.

Managing the SNMP Library

Simple Network Management Protocol (SNMP) is a standardized network protocol used to monitor devices, such as PDUs, that are attached to a network. The SNMP library contains a list of items currently monitored by dcTrack via SNMP.

The SNMP library also contains information on the MIB browsers that are used by the SNMP network to query the items on the network, as well as MIB library manufacturer information.

You are able to unlink and link items to MIB libraries from the SNMP library. You are also able add, edit and delete MIB library information in addition to adding and editing MIB library, browser and object details.

SNMP Library

To access the SNMP library:

- Select Administration > Libraries > SNMP.

To view MIB library browser and object details:

- In the MIB Library section of the page, click on the library you want to view details for. Browser and object details are displayed in the MIB Browser and Object Details section of the page.

Linking and Unlinking Items to MIB Libraries

To unlink or link items to a library:

1. Select Administration > Libraries > SNMP.
2. Select a model from the list on the left side of the page.
3. In the MIB Library section of the page, click on the library you want to link the model to or unlink it from.
4. Click Link to MIB to link the item to the MIB library or Unlink from MIB to unlink the item from the MIB library.

Viewing Item Details in the MIB Library

To view MIB library browser and object details:

1. Select Administration > Libraries > SNMP.
2. In the MIB Library section of the page, click on the library you want to view details for. Browser and object details are displayed in the MIB Browser and Object Details section of the page.

Adding, Loading, Editing and Deleting MIB Library Items

To add a MIB item to a library:

1. Select Administration > Libraries > SNMP.
2. In the MIB Library section of the page, click on the item you want to add to the MIB library.
3. Select the item class, enter a name for the MIB and select the item's manufacturer.
4. Click Add. The item is added to the MIB library.

To load a MIB library:

1. Select Administration > Libraries > SNMP.
2. In the MIB Library section of the page, click Load.
3. Locate the .txt or .mib library, select the it and click Save.

To edit a MIB library item:

1. Select Administration > Libraries > SNMP.
2. In the MIB Library section of the page, click on the item you want to edit.
3. Click Edit.
4. Edit the item class, name for the MIB or the item's manufacturer.
5. Click Update.

To delete a MIB library item:

1. Select Administration > Libraries > SNMP.
2. In the MIB Library section of the page, click on the item you want to delete.
3. Click Delete.
4. Click Yes to confirm the deletion.

Lists

Lists are maintained by administrators and work in conjunction with libraries as a tool to manage the information collected in and maintained by dcTrack. Items can be added to lists and edited as needed to fulfill your specific requirements. dcTrack provides you with a warning when list items are being used by the application in order to avoid corrupting data if you intend to edit the item. However, you are still able to edit items, if needed.

Items can be deleted if they are not being used by the application. If the item is being used, a message is displayed in the Add/Edit List Item section of the page and the Delete button is disabled. In order to delete the item, you must first remove it from every application record that is currently using it.

To select a list and view its list items:

1. Select Administration > Lists.
2. In the Lists section of the page, click on the list you want to view.

   The list items are displayed in the List Contents section of the page. The Add/Edit List Item section displays the number of times the item is used by the application and a description of the item.

List Types

List type	Description
Application Criticality,	Used in the IT Items\Device page for Application tracking.

List type	Description
Application Names and Application Sites	
Cabinet Groupings	For making logical groups of cabinets. Used in the IT Items\Cabinets, Visualize\Elevations and IP Subnets pages.
Colors	For color coding of ports and IP Subnets. Used in all Item pages for color coding ports. Used in IP Subnets page for color coding subnets.
DNS Suffix List	Is a suffix added to the Name of a server to create the DNS name for that server. Used in the IP Subnets page.
Domains	Used in the IT Items\Device page to identify the Domain of a server.
Item Function	Used to identify the function of an Item. Used in all Item pages.
Item Type	Used to identify the Type of an Item. Used in all Item pages.
Media/AWG	Used to tag Comm Panel ports with the communications cabling grade or Power Outlet ports with the electrical cable gauge.
Operating System	Used to identify the OS of a server in the IT Items\Device page.
Port Protocol, Port Speed	Used to identify a Comm port's Protocol and Data Rate. Used in the Comm Ports section of all Item pages.
Rack PDU Fuses	Used to identify the Fuse or Circuit Breaker within a Rack PDU. Used in the Power Item\Rack PDU page.
Service Level Agreement	For identifying the SLA of a particular item. Used in all Item Detail 2 pages.
Subnets/VLANs	Used to identify logical names of subnets and to build the full name of a subnet. Used in the IP Subnets page and for tagging all Comm Ports.
T/H Probe Locations	Used to identify the approximate location within a cabinet for the Temperature or Humidity Probes. Used in the Power Item\Rack PDU and Environmental Item\Probe pages.
User Departments	To identify the ownership of a Device Item or an application usage.
Custom Field	Used for creating custom fields for use with all items

List type	Description
Headings	or applied to specific item classes. Appears on item Detail 2 pages. See ***Working with Custom Fields*** (on page 156).
Virtual Machine Clusters	For identifying the Cluster that a VM or a VM host belongs to. Used in the IT Items\Device page.

Adding, Editing and Deleting List Items

To add an item to a list:

1. Click Administration > Lists to open the Lists page.
2. In the Lists section of the page, click on the list you want to add the item to.
3. Click Add.
4. In the Add/Edit List Item section of the page, enter a name for the item. **Required**
5. Enter a description of the item.
6. Enter any additional information as needed and where applicable. The information that can be entered will vary depending on the list you are adding it to.
7. Click Save.

To edit a list item:

1. In the Lists section of the page, click on the list that contains the item you want to edit.
2. In the List Contents section of the page, click on the item you want to edit.
3. Click Edit.
4. In the Add/Edit List Item section of the page, edit the name or description as needed.
5. Edit any additional as needed and as allowed by the application.
6. Click Save.

To delete a list item:

1. In the Lists section of the page, click on the list that contains the item you want to delete.
2. In the List Contents section of the page, click on the item you want to delete.

3. If the item is being used by an application record, the Delete button is disabled and you cannot delete it until you remove the item from each record that is using it.
4. If the item is not being used by an application record, click Delete.

Working with Custom Fields

You are able to create custom fields that will be associated with item classes and appear on the Detail 2 page for those items. For example, you can create a custom field called Patch Level to capture the patch level information for a server device.

Since custom fields are associated with specific item classes, they will only appear on the Detail 2 pages of the item classes they are associated with. So, if you have a custom field called Firmware that is applied to Networks, that field will only appear on Network item Detail 2 pages.

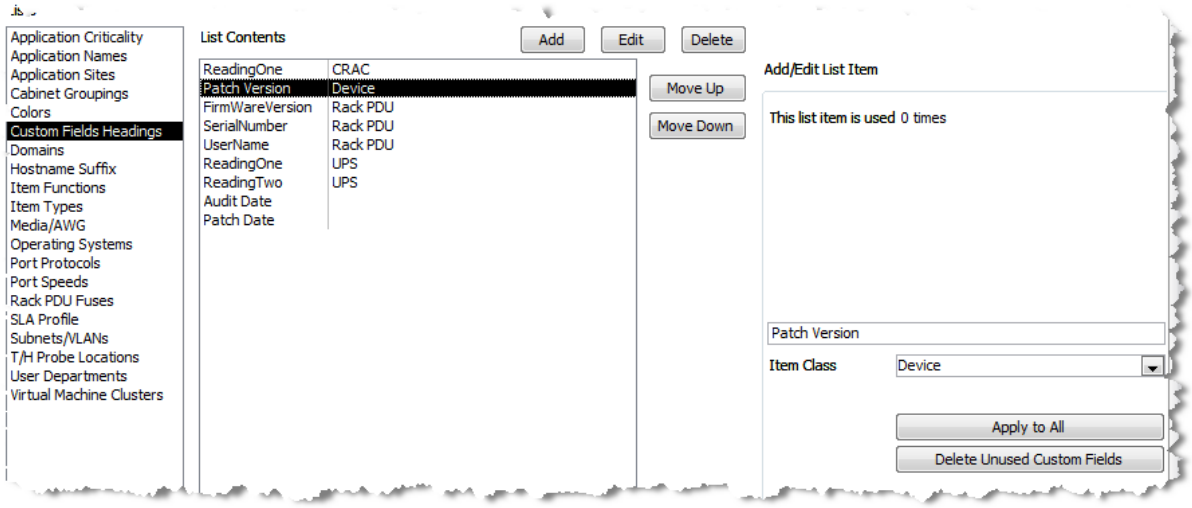
Custom fields that will launch web browsers or open Windows® Explorer® can also be created for the Detail 2 pages. This feature functions much like using the Windows Start\Run command line.

Creating Custom Fields

To create a custom field:

1. Click Administration > Lists to open the Lists page.
2. In the Lists section of the page, click Custom List Fields.
3. Click Add.
4. In the Add/Edit List Item section of the page, enter a name for the field. Up to 25 characters can be used for the field name. **Required**
5. Select an item class to associate the field with.
6. Click Save.

7. If needed, click Apply to All to apply the field to all of the item Detail 2 pages for the selected class.



Reordering Custom Fields on Detail 2 Pages

From the Custom Fields Heading list, you can change the order in which the fields will appear on the item class Detail 2 pages. Since custom fields are associated with a specific item class, you can only change their order within that item class.

For example, if Patch Level and OS Version custom fields are applied to the Device item class and a field called Firmware is associated with the Network item class, you will only be able to move the Device class fields up or down in the order they appear. Clicking on and trying to move the Firmware custom field will not work because it is not associated with the same class and, thus, won't appear on the Device item class Detail 2 pages.

To change the order in which custom fields appear on a Detail 2 page:

1. Click Administration > Lists to open the Lists page.
2. In the Lists section of the page, click Custom List Fields.
3. Using the Move Up and Move Down buttons for this list, define how custom fields are ordered on the dcTrack Item pages.

Deleting Unused Custom Fields

Deleting unused custom fields is different from deleting the custom field from the application permanently. See ***Adding, Editing and Deleting List Items*** (on page 155). This function removes the fields from the Detail pages on which they appear but are not being used. For example, if you created a custom field called Patch Version and applied to both device items and network items but wanted to delete it from the network items since it is not being used, this function allows you to so.

To delete unused custom fields:

1. Click Administration > Lists to open the Lists page.
2. In the Lists section of the page, click Custom List Fields.
3. Click Delete Unused Custom Fields.

User Management - Windows Client

dcTrack users are created and maintained in the dcTrack Management Client. See ***Adding, Editing, and Deleting Users*** (on page 25) for more details. The team's users are assigned to are created in the Windows® Client. See ***Teams*** (on page 158). Since users must be assigned to a team to use dcTrack, it is recommended that teams be created before user accounts but this is not required in order to create user accounts.

If you need to edit user information, aside from changing the user's unit of measure and clearing their sort history, you must do so in the Management Client. See ***User Management - Management Client*** (on page 21).

Teams

Teams are used to organize users within dcTrack. Teams are defined and maintained by Gatekeepers in the dcTrack Windows Client and are assigned to users during the user creation process in the Management Client.

Note: It is recommended that teams be created before user accounts but this is not required in order to create user accounts.

Adding Teams

To add a team:

1. In the dcTrack Windows® Client, select Administration > Users to open Users page.
2. In the Teams section, enter a name for the team in the first field and description of the team in the second field. **Required**

3. Click Update. The team is added to the list and is available in the Team drop-down in the User Details section of the page.

Editing and Deleting Teams

To edit a team:

1. In the dcTrack Windows® Client, select Administration > Users to open Users page.
2. Click on the gray record box of the team you want to edit.
3. Edit the name or description of the team as needed.
4. Click Update.

To delete a team:

1. Click on the gray record box of the team you want to delete.
2. Click Delete and then click Yes on the confirmation.

Managing User Settings and Clearing a User's Sort Order

User settings refers to the unit of measure and the default site the user is associated with. Units of measure can be either U.S. or metric measurements and apply to all measurements captured in dcTrack such as cabinet height, item weight, and so on. U.S. is the default setting.

The default site is the site that is automatically selected each time dcTrack is launched. Users can switch to any other site in the database at any time. If this default site setting is not set for a user, the default application site is automatically selected each time dcTrack is launched.

You can also clear a user's sort order from the User Settings section of the page.

To change user settings:

1. In the dcTrack Windows Client, click Administration > Users.
2. On the User page, click on the name of the user you want to modify settings for.
3. Click Edit.
4. In the User Settings section of the page, define the following settings:
   a. Units displayed in - US measurements or metric measurements.
   b. Default Site - the default site the user is associated with.
   c. If needed, click Clear to clear the user's sort order.
5. Click Save.

To clear a user's sort order:

1. Click Administration > Users.
2. On the User page, click on the name of the user you want to modify settings for.
3. Click Edit.
4. In the User Settings section of the page, click Clear.
5. Click Save.

Viewing User Activity Reports

To view an activity report for a user:

1. In the dcTrack Windows® Client, select Administration > Users to open Users page.
2. Click on the name of the user for whom you want to view an activity report.
3. In the User Activity Report section of the page, select the type of report you would like to view:
   a. Summary Report - the user's session start and end times, as well as the duration of the session.
   b. Detailed Report - the user's session start and end times, the duration of the session, and the action the user performed in the application.
4. Select the user or users you want to include in the report:
   a. Selected User - only information on the currently selected user is included in the report.
   b. All Users - all users are included in the report.
5. Click Preview. The report opens in a secondary browser window. Right click and select Print to print the report.

Using snmpTrack Poller

snmpTrack™ Poller polls SNMP-capable items in your data center, collects data from them, and stores the data in a historical database. snmpTrack Poller collects the following item data:

- Current
- Temperature
- Humidity
- CPU utilization
- Disk usage

This information is used in the snmpTrack report (Reports > snmpTrack) to plot the readings for the polled items over a defined time period. See ***snmpTrack Report*** (on page 146). Additionally, the data that is captured is used to update the item's Detail page.

In order for an item to be polled, the following criteria must be met:

- A comm port with a valid IP address and a SNMP community string must be defined for the item
- A MIB must be defined and mapped to the item model

You must dedicate a client installation to run snmpTrack Poller because you will not be able to use any other dcTrack features when snmpTrack Poller is running. In order to ensure there are no gaps in the collected data, do not stop the snmpTrack Poller once it has begun.

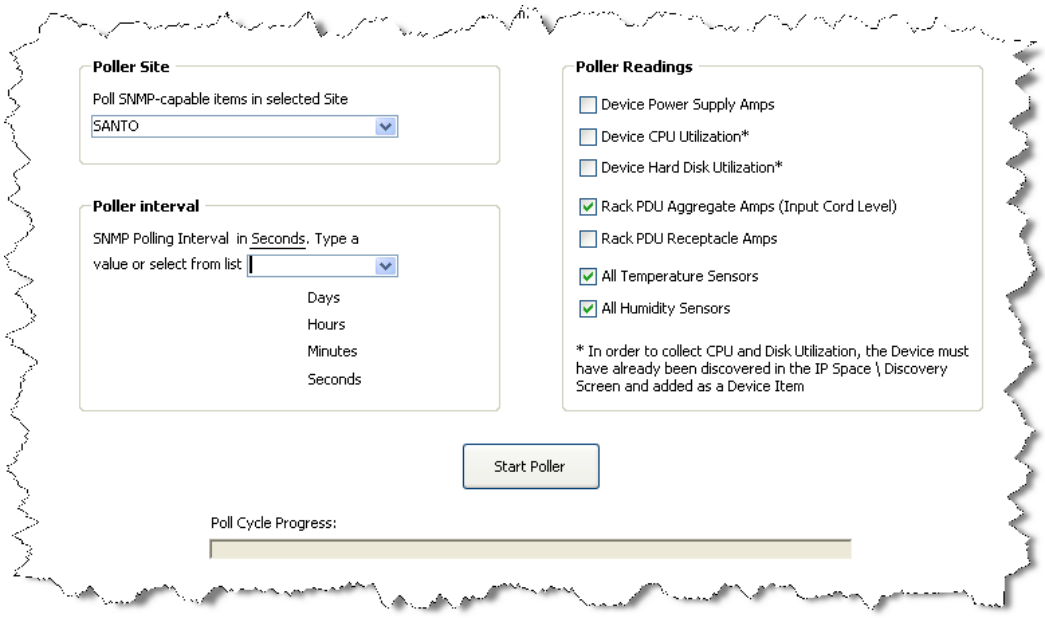
snmpTrack Poller collects data from the site that is selected from the Poller Site drop-down on the snmpTrack page. If you are collecting data for other sites, install dcTrack on a client for those sites and use that installation to run snmpTrack Poller.

If an error occurs during the snmpTrack polling process, it is logged in the snmptrack.log file without affecting the polling process. This log file is found in your C:\program files\dcTrack folder.

To begin the snmpTrack Poller process:

1. Select the site you want to poll from the Poller Site drop-down.
2. In the Polling Interval section, enter the polling interval measured in seconds.
3. In the Poller Readings section, select the data readings you would like fetched during the snmpTrack polling.

4. Click Start Poller. The progress of the poll is displayed using the Poll Cycle Progress bar.


Poller Site
Poll SNMP-capable items in selected Site
SANTO
Poller interval
SNMP Polling Interval in Seconds. Type a value or select from list
Days
Hours
Minutes
Seconds
Poller Readings
Device Power Supply Amps
Device CPU Utilization*
Device Hard Disk Utilization*
Rack PDU Aggregate Amps (Input Cord Level)
Rack PDU Receptacle Amps
All Temperature Sensors
All Humidity Sensors
* In order to collect CPU and Disk Utilization, the Device must have already been discovered in the IP Space \ Discovery Screen and added as a Device Item
Start Poller
Poll Cycle Progress:

Creating a SNMP MIB Definition

For each item you want to collect data from via SNMP, you will need to create an SNMP MIB definition.

To create an SNMP MIB Definition:

1. From the SNMP library:
   a. Select Administration > Libraries > SNMP.
   b. Add a MIB definition in the MIB Library section of the page.
   c. Load a MIB file that is provided by the item manufacturer.
   d. Once the MIB is loaded, you can browse in the MIB Browser and Object Details section of the page.
   e. Identify the MIB OID that contains the data you want and select it in the browser. The details of this OID branch are shown in the lower right section of the page.
   f. From the Link OID to dcTrack drop-down, select the dcTrack field that corresponds to the OID value.

Note: If you want to select a custom field, type the name of the custom field into the drop-down. If the custom field already exists, it will be added. If the field is not found, you are prompted by the application to create it. Create the field if needed.

g. Select a multiplication factor to correct the unit. For example, the amps value in MIB is stored in milliamps and must be multiplied by 0.001 to store the value as amps in dcTrack.

h. Once all fields are mapped, link the MIB definition with all the models that use it by selecting the MIB in the MIB Library section and then selecting all the models you want to link to the MIB (use Ctrl and Shift keys for multiple selections). Click Link. Repeat the process for other MIBs.

2. From an item page such as a Rack PDU page:

   a. Add a Comm Port.

   b. Provide the IP address and SNMP Community Name.

   c. Click Get Readings and that will provide a new SNMP reading.

Import Wizard

The Import wizard imports items, comm circuit connections and power circuit connections into the dcTrack database from a Microsoft Excel® spreadsheet or a CSV file. Imports can be done for new installations, and to bulk update items and connections that already exist in dcTrack. It is recommended that you import cabinets into dcTrack before you import the items that are contained in the cabinets.

The import works by mapping spreadsheet column headings to dcTrack fields and pulling in the item data that appears in the cells of the spreadsheet under each column.

You can save the current data in Excel format at any time during the import process using the Save As feature. This ensures that there is no data loss or wasted effort if you need to stop the import process before it completes. You can resume the import later by selecting the saved spreadsheet as the new import source file.

There are data formatting requirements that need to be applied to your spreadsheets in order to ensure the data is imported successfully with minimal intervention required. Raritan provides you with spreadsheet templates that you can download in order to ensure you follow the correct format. See ***Import Wizard Templates*** (on page 165). However, you can import spreadsheets that are not based on the Raritan templates. These spreadsheets must follow certain formatting requirements in order to ensure they are successfully imported. See ***Data Formatting Requirements*** (on page 165).

Import Wizard Interface

Access the Import page by selecting Administration > Wizards > Import. The Import page is made up of three areas divided by function - a data table, a field match panel and an import panel.

Import Page

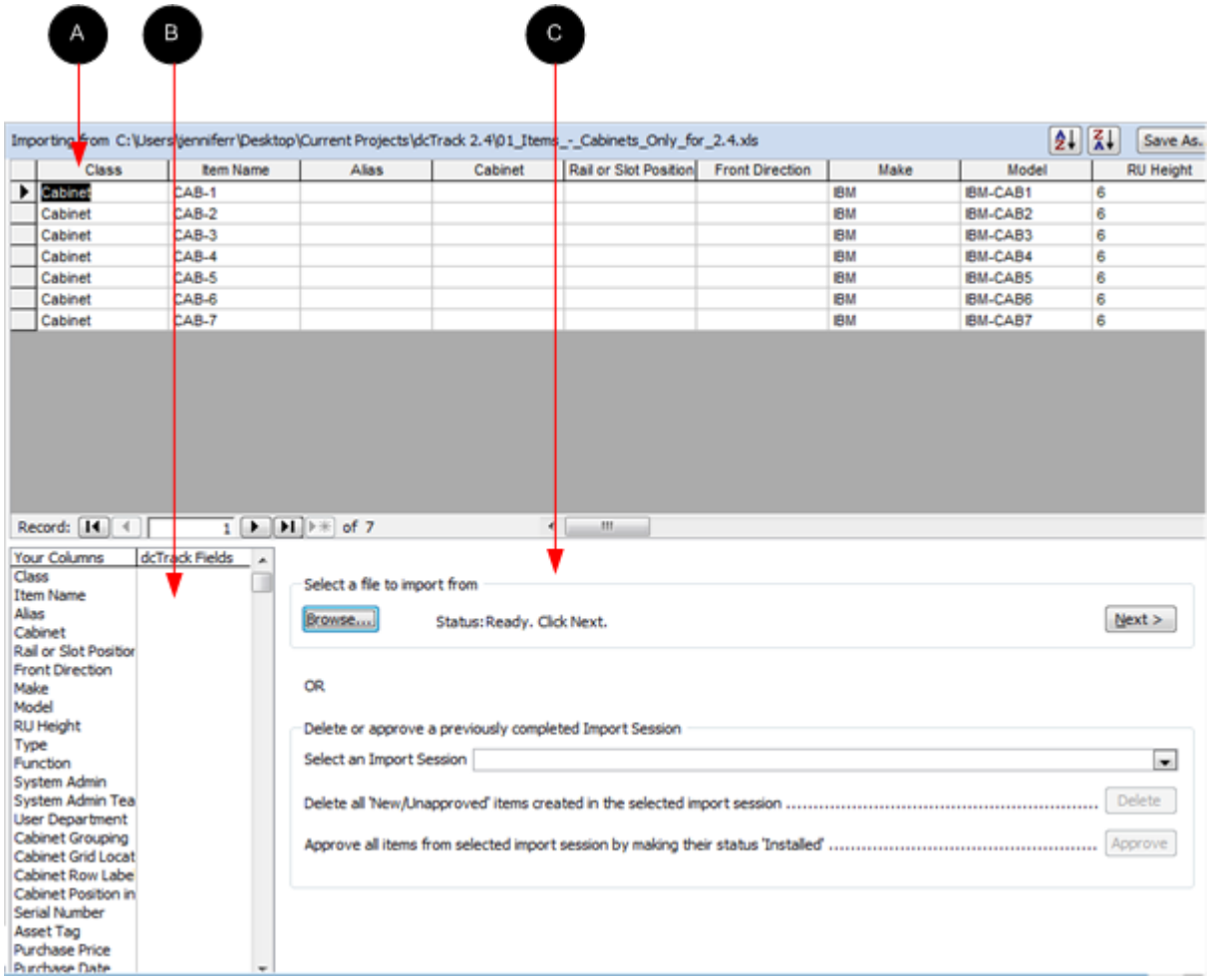


Diagram key	
A	Data table - This section contains spreadsheet data that is being imported. This section remains visible throughout the wizard steps, , allowing you to refer to it in order to ensure any changes made during the import do not affect the data in the source file. Data can be sorted by each column. To do this, place the cursor in any cell under the desired column and click the Sort Order icon in the upper right corner of the page.
B	Field match panel - Contains a list of the items being imported and the items they are matched to in dcTrack.
C	Import wizard panel - Opens once the source spreadsheet is selected and contains the pages of each wizard step as you move through each step.

Import Wizard Templates

Raritan, Inc. has spreadsheet templates available that you can download from the Raritan FTP site. These templates can be used to ensure you correctly format data for import into dcTrack.

Contact Raritan Sales if you have not already been given access to this FTP site to download the templates.

Data Formatting Requirements

Following are Microsoft Excel® and CSV file data formatting requirements that must be followed in order to successfully import the spreadsheet data into dcTrack.

Note: dcTrack does not support .xlsx file formats for Microsoft Excel 2010®.

It is recommended you first import cabinets into dcTrack and then import the items and connections associated with the cabinets. It is also recommended that you order the spreadsheet columns in the same order as they are listed in the tables contained in this section of help in order to avoid being prompted during the import process to manually map headings-to-fields.

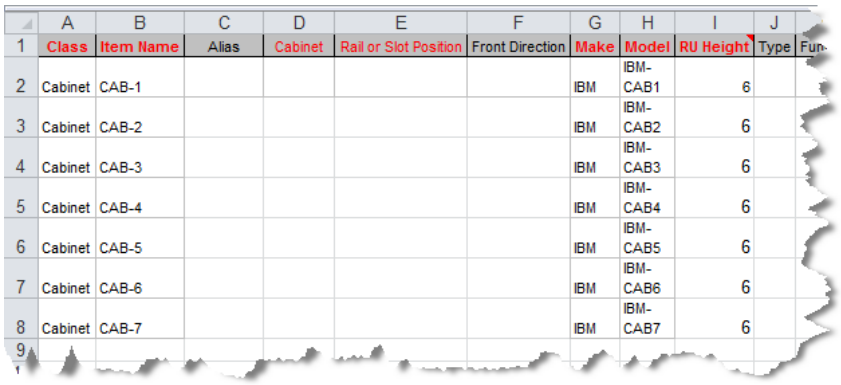
General Spreadsheet Requirements

The following rules apply to all spreadsheets.

- The first row cannot be empty and must contain the column headings that are mapped to dcTrack fields. If the first row is empty, dcTrack generates generic column heading names such as Heading 1, Heading 2 and so on. These headings will then have to be mapped manually to corresponding dcTrack fields.
- Each spreadsheet can contain up to 50 columns. If the spreadsheet has more than 50 columns, split the additional columns into another file.

Cabinet Import Requirements

It is recommended that you first import only the cabinet information so you have a structure in place in which to populate the items that will be contained in each cabinet. If you do not have the cabinets imported first, you must manually update of each cabinet at a later time.



	A	B	C	D	E	F	G	H	I	J
1	Class	Item Name	Alias	Cabinet	Rail or Slot Position	Front Direction	Make	Model	RU Height	Type
2	Cabinet	CAB-1					IBM	IBM-CAB1	6	
3	Cabinet	CAB-2					IBM	IBM-CAB2	6	
4	Cabinet	CAB-3					IBM	IBM-CAB3	6	
5	Cabinet	CAB-4					IBM	IBM-CAB4	6	
6	Cabinet	CAB-5					IBM	IBM-CAB5	6	
7	Cabinet	CAB-6					IBM	IBM-CAB6	6	
8	Cabinet	CAB-7					IBM	IBM-CAB7	6	
9										

IMPORTANT: In order to avoid being prompted to manually map columns-to-fields during the import process, make sure your spreadsheet columns are named in the same way as they appear in this table.

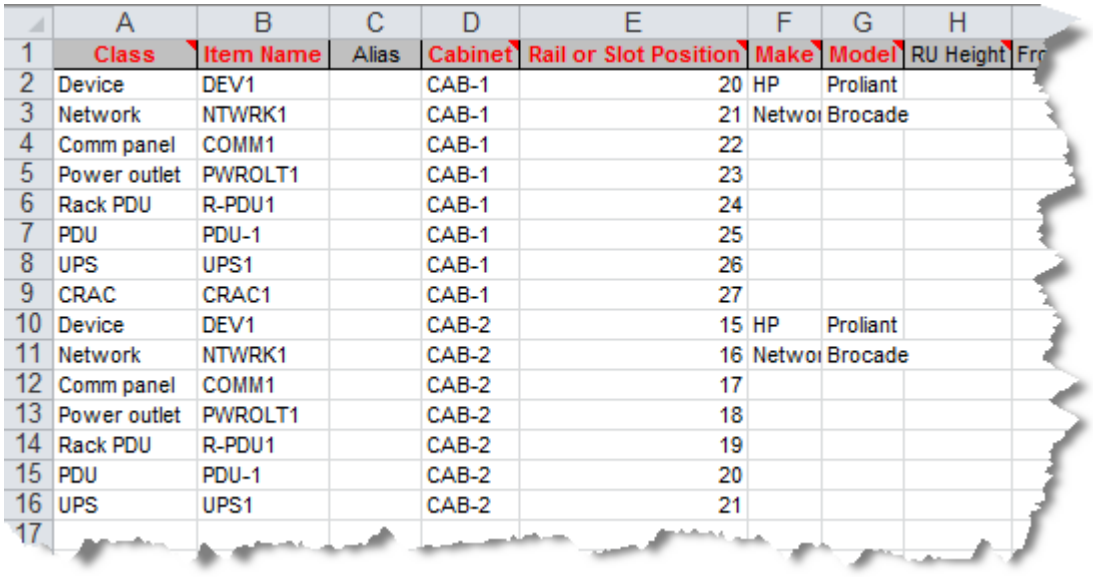
Column name/item	Description
Class	Required column. When importing cabinets, this column always contains the value `Cabinet/Rack`. If class is not included, a cabinet item is created using the name listed in the Cabinet column.
Item Name	Required column. This column contains the cabinet name. If the item name is not included, a cabinet item is

Column name/item	Description
	created using the name listed in the Cabinet column.
Alias	Optional column.
Cabinet	Required column. Leave this column blank.
Rail or Slot Position	Required column. Leave this column blank.
Front Direction	Optional column. Use the values `North`, `South`, `East` and `West` to indicate the direction that the cabinet front points to with respect to the data center room's North point.
Make	Required column. This column contains the cabinet make. If the make is not included, a cabinet item is created using the name listed in the Cabinet column.
Model	Required column. Model names must be unique. If the model is not included, a cabinet item is created using the name listed in the Cabinet column. For example, if you have two types of cabinets made by Dell from the same product family but one is 40 U and the other is 42 U, create two model names such as Dell Cabinet 40U and Dell Cabinet 42U.
RU Height	The number of rack units in the cabinet.
Type	Optional column. Use the values `Cabinet` or `Rack`.
Function	Optional column.
System Admin	Optional column.
System Admin Team	Optional column.
User Department	Optional column.
Cabinet Grouping	Optional column. Used to manage cabinets in logical groups. Enter

Column name/item	Description
	the name of the group that a cabinet belongs to.
Cabinet Grid Location	Optional column. The grid location that the cabinet falls in when using raised floor tiles as a grid consisting of letters on one axis and numbers on the other.
Cabinet Row Label	Optional column. The label of the row that the cabinet is in. If using numbers, precede it with zeros so all row numbers have the same number of digits.
Cabinet Position in Row	Optional column. Indicates the position of the cabinet within the row. Position 1 should begin from the same end for all rows with the same orientation.
Serial Number	Optional column.
Asset Tag	Optional column.
Purchase Price	Optional column.
Purchase Date	Optional column.
Installation Date	Optional column.
Contract Number	Optional column.
Contract Amount	Optional column.
Contract Begins On	Optional column.
Warranty Expiration Date	Optional column.
SLA Profile	Optional column.
Comment	Optional column.
Custom Field	Optional column. This column can be mapped repeatedly for as many custom fields as you need up to a maximum of 50 columns. If the spreadsheet has more than 50 columns, split the additional custom fields into another file and include the required columns in red above.

Item Import Requirements

Once cabinets exist in dcTrack, you can import the items that are contained in each cabinet.



	A	B	C	D	E	F	G	H
1	Class	Item Name	Alias	Cabinet	Rail or Slot Position	Make	Model	RU Height
2	Device	DEV1		CAB-1	20	HP	Proliant	
3	Network	NTWRK1		CAB-1	21	Networ	Brocade	
4	Comm panel	COMM1		CAB-1	22			
5	Power outlet	PWROLT1		CAB-1	23			
6	Rack PDU	R-PDU1		CAB-1	24			
7	PDU	PDU-1		CAB-1	25			
8	UPS	UPS1		CAB-1	26			
9	CRAC	CRAC1		CAB-1	27			
10	Device	DEV1		CAB-2	15	HP	Proliant	
11	Network	NTWRK1		CAB-2	16	Networ	Brocade	
12	Comm panel	COMM1		CAB-2	17			
13	Power outlet	PWROLT1		CAB-2	18			
14	Rack PDU	R-PDU1		CAB-2	19			
15	PDU	PDU-1		CAB-2	20			
16	UPS	UPS1		CAB-2	21			
17								

IMPORTANT: In order to avoid being prompted to manually map columns-to-fields during the import process, make sure your spreadsheet columns are named in the same way as they appear in this table.

Note: Power Supply fields identified with an asterisk must all be mapped together. You cannot map a subset of these columns.

Column name/item	Applies to...	Description
Class	All items	Required column. The class must be one of the following: • Device • Network • Comm panel • Power outlet • Rack PDU • PDU • UPS • CRAC • Passive chassis

Column name/item	Applies to...	Description
		Device class includes all servers, disks, tapes, blade devices, blade server chassis and all other hosts. Network class includes all switches, routers, firewalls, KVM switches and other network appliances. Comm panel class includes any patch panel for communications cabling. Power outlet class includes outlets under a raised floor or above the cabinets. Passive class are horizontal wire managers. If it is easier, you can use a separate spreadsheet for each Item Class.
Item Name	All items	Required column.
Alias	All items	Optional column.
Cabinet	All items	Required column. This is the name of the cabinet that contains the item. *Note: Cabinets must exist in dcTrack in to map items to them.*
Rail or Slot Position	All items	Required column. The number of the rail position the item is installed on. The position is based on the bottom most rack unit of the item. For a zero-U rack PDU, enter the rail position that is nearest to the bottom of the rack PDU.
Make	All items	Required column. The item's manufacturer.
Model	All items	Required column. The item's model name or number. Use the full name of a model and include a product family name. For example, for an HP server, use Proliant DL380 G5,

Column name/item	Applies to...	Description
		rather than just DL380 G5.
RU Height	Network items	Optional column. The number of rack units of the item (that is, the item's height in the cabinet in rack units). If the model doesn't already exist in dcTrack's Model library, you will need to provide the RU height for each model you have to add.
Front Direction	Floor-standing items	Optional column. Use the values `North`, `South`, `East` or `West` to indicate the direction the cabinet front points to in respect to the data center room's North.
Orientation in Cabinet	Rackable items	Optional column. Use the values `Item Front Faces Cabinet Front` or `Item Rear Faces the Cabinet Front`.
Side in Cabinet	ZeroU items	Optional column. Use the values `Left` or `Right` to indicate the location of a vertically mounted item in the rear of the cabinet.
Chassis Name	Device and network items	Optional column. When dealing with blade devices or chassis style switches, indicate the name of the chassis that contains the blades. Use this column to enter the name of the chassis. You must also enter a separate row for the chassis, keeping this column blank for chassis' entry. A row for the chassis must be included even if the chassis already exists in the database.
Network Stack Name	Network items	Optional column. If you have a situation where several switches are connected together in a network stack or subnet, use this column. Enter the name of the stack or subnet in

Column name/item	Applies to...	Description
		this column for each switch. Unlike chassis based switches, you do not need a separate row for the name of the stack.
Network Stack Number	Network items	Optional column. This is the number given to each stack and is appended to the end of the network stack name to form a unique item name.
Type	All items	Optional column.
Function	All items	Optional column.
System Admin	All items	Optional column.
System Admin Team	All items	Optional column.
User Department	All items	Optional column.
Serial Number	All items	Optional column.
Asset Tag	All items	Optional column.
Purchase Price	All items	Optional column.
Purchase Date	All items	Optional column.
Installation Date	All items	Optional column.
Contract Number	All items	Optional column.
Contract Amount	All items	Optional column.
Contract Begin Date	All items	Optional column.
Warranty Expiration Date	All items	Optional column.
SLA Profile	All items	Optional column.
Operating System	Device and network items	Optional column.

Column name/item	Applies to...	Description
Domain	Device items	Optional column.
OSI Layer	Network items	Optional column. Network items that identify the OSI layer as the primary function of the item.
VM Cluster	Device items	Optional column. Virtual machines or virtual machine hosts into a VM cluster.
VM DataStore Location	Device items	Optional column. The physical machine on which the VM's datastore file is located.
VM DataStore Volume	Device items	Optional column. The volume on the physical machine on which the VM's datastore file is located.
Rack PDU Group Name	Rack PDU class	Optional column. Use this field to group many rack PDUs that exist in a cabinet.
Number in the Group	Rack PDU class	Optional column. Use this field to assign a Rack PDU a number to identify it among others in the group.
Custom Field	All items	Optional column. This column can be mapped repeatedly for as many custom fields as you need (up to the maximum number of 50 columns supported by the import process).
Comm Port Quantity	Comm ports	Optional column. Use this field for all items (except for comm panel items) that can have a comm port. This field indicates the number of communications ports to be created. During the import process, you will specify the attributes of the port such as the connector, media and speed. Create additional columns for each type of comm port and fill the column with the quantity of ports.

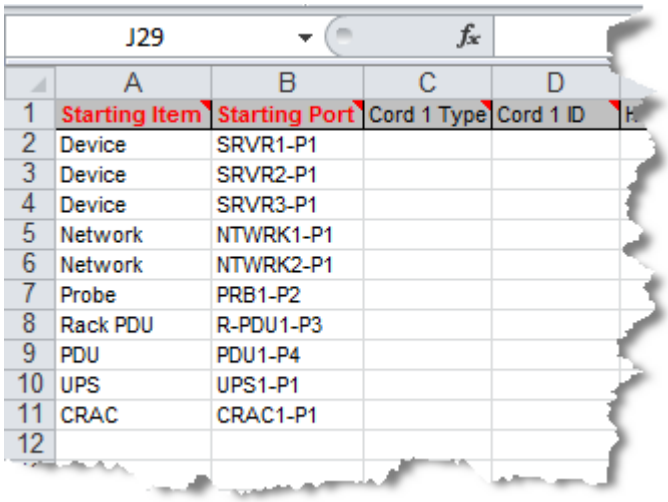
Column name/item	Applies to...	Description
Power Supply Name Prefix*	Power ports	Optional column. Contains the power supply ports for the items. The typical value is `PS`. For example, if the quantity column contains the value of 2, two Power ports will be created and named PS1 and PS2.
Power Supply Quantity*	Power ports	Optional column. The total number of the item's power supplies.
Power Supply Connector*	Power ports	Optional column.
Power Supply Input Phase*	Power ports	Optional column. Enter either `Single-Phase`, `Three-Phase (Wye)` or `Three-Phase(Delta)`.
Power Supply Voltage*	Power ports	Optional column. The voltage capability of the item. If the item can operate on both 120 and 240 volts, enter `120~240V`. Otherwise enter either `120V` or `240V`. *Note: This is not the actual voltage that the power supply will be running at, which is determined by what the item is connected to.*
Power Supply Nameplate Watts*	Power ports	Optional column. The power supply nameplate rating as found on the manufacturer's data sheet for the item.
Power Supply Budget Watts*	Power ports	Optional column. The estimated power value the item is expected not to exceed (that is, the derated power). dcTrack will reserve this much power for the item from the power supplied to the cabinet. Typically, this value can be derived from the nameplate power using a derating factor of 50% to 70%.
Power Supply	Power ports	Optional column.

Column name/item	Applies to...	Description
Power Factor*		If not specified in the manufacturer's data sheet, enter `1`.
Power Supply Redundancy	Power ports	Optional column. Indicates the redundancy level of the power supplies for an item. Enter this as `N+x`, where `x` is a number from 1 to N-1 that indicates the number of extra or redundant supplies. `N` is the total number of power supplies. Most servers with two power supplies require only one supply to operate, so you would enter `N+1`. If extra or redundant power supplies are required or the item has only one, enter `N`.
Comment	All items	Optional column. Create more columns to track additional data about the item as needed up to the maximum of 50 total columns per spreadsheet. These columns will be imported as custom fields.

Comm Circuit Import Requirements

For comm circuits, each row after the first row in a spreadsheet must correlate to a dcTrack comm circuit consisting of up to 8 endpoints: 2 endpoints – one at the beginning of the connection and one at the end, plus 3 hops of 2 endpoints each.

The data must include columns for the item name and port name for each endpoint. Optionally, you can include the connection type and label for the connection between endpoint pairs. The item and port name columns should contain the name of items and ports that match existing item and port names in dcTrack.



J29

	A	B	C	D
1	Starting Item	Starting Port	Cord 1 Type	Cord 1 ID
2	Device	SRVR1-P1		
3	Device	SRVR2-P1		
4	Device	SRVR3-P1		
5	Network	NTWRK1-P1		
6	Network	NTWRK2-P1		
7	Probe	PRB1-P2		
8	Rack PDU	R-PDU1-P3		
9	PDU	PDU1-P4		
10	UPS	UPS1-P1		
11	CRAC	CRAC1-P1		
12				

When you are creating a hop for comm circuits, you only need to define the near end since the circuit's port defines what it is connected to. For example, CommPanelA in CabinetA terminates at CommPanelB in CabinetB. When you are defining this hop in Import wizard, you only need to define CommPanelA and the port. CommPanelB is implicit.

IMPORTANT: You cannot use a single file that includes a variety of hop quantities for each circuit. Make one file for all circuits that use no cabling hops, one file for those that have only one hop, one file for those with 2 hops and one file for those with 3 hops.

IMPORTANT: In order to avoid being prompted to manually map columns-to-fields during the import process, make sure your spreadsheet columns are named in the same way as they appear in this table.

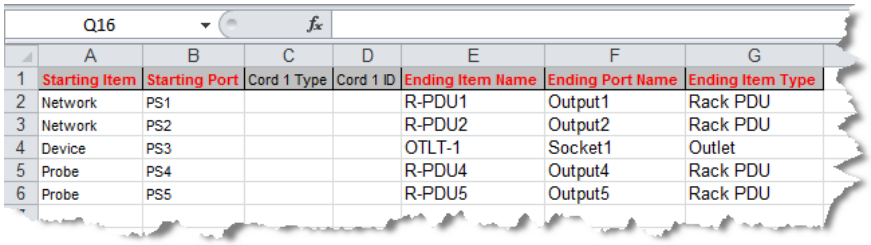
Column name/item	Description
Starting Item	Required column. The name of the item at the beginning of the circuit. A comm circuit can only begin with the following classes: • Device • Network • Probe • Rack PDU • PDU • UPS • CRAC Circuits can only end with a device or network item. If a circuit begins with a network item, it must also end with a network item. When a circuit involves a device and a network item, always begin with the device and end with the network item.
Starting Port Name	Required column. The name of the port that is used in the circuit.
Cord 1 Type	Optional column. Column for tracking the type of patch cord used between the starting port and the next hop. For example, cord type can be `Red Patch Cord` and `Cross-over Patch Cord`.
Cord 1 ID	Optional column.

Column name/item	Description
	Column for the patch cord label/ID.
Hop 1: Near End Panel Name	Optional column. If structured cabling is used, enter the name of the patch panel that connects to the starting port. If there are no patch panel names, create a name. Use the name of the cabinets followed by a number or letter to indicate the panel number in the cabinet. You can separate the two with a dash for readability. For example, the second patch panel in a cabinet that is called C33 would be C33-2. If the port numbers in the panel are not unique within the data center, the panel name in combination with the port name makes the port name unique. You must provide a panel name even though port names are unique. *Note: Each cable hop consists of two panel pairs with a permanent cabling between them. The other panel is referred to as the far end panel when the perspective is the starting item. The far end panel name is not required because the structured cabling layout must be pre-entered into dcTrack before importing connections.* *Do not confuse the far end panel with the Hop 2 column. Hop 2 is used when a second pair of panels is involved in a circuit.*
Hop 1: Port Name	Optional column. The patch panel port name is typically the cable ID. If there are no cable IDs or the panel ports are not labeled, use the manufacturer port numbers of the panel. For example, for a 48-port patch panel, number the ports 1 through 48. Make sure you distinguish the port numbering sequence. Port order may go from left to right for the first row of ports, then go to the next row below it (following the shape of the letter Z). Alternately, they may go from the top port to port below it then over to the next top port and the one below that and so on (following the shape of a reverse letter N).
Cord 2 Type	Optional column. This is an optional column for tracking the type of patch cord used between the hop 1 port and the

Column name/item	Description
	next hop.
Cord 2 ID	Optional column.
Hop 2: Near End Panel Name	Optional column. See hop 1 above in the table. Hop 2 is rarely used, but if the circuit travels through several panels, enter it using the Hop 2 panel name and port column pair. *Note: This is not the far end panel of hop 1.* If no circuit will have a second or third hop, you can delete those columns along with their Cord Type and Cord ID columns to make the spreadsheet easier to work with.
Hop 2: Port Name	Optional column.
Cord 3 Type	Optional column.
Cord 3 ID	Optional column.
Hop 3: Near End Panel Name	Optional column.
Hop 3: Port Name	Optional column.
Cord 4 Type	Optional column.
Cord 4 ID	Optional column.
Ending Item Name	Required column. The name of the item at the end of the circuit. A comm circuit can end with a device or network item only. If a circuit begins with a network item, it must also end with a network item.
Ending Port	Required column.

Power Circuit Import Requirements

For power circuit spreadsheets, each row after the first row must correlate to a dcTrack power circuit consisting of only two endpoints. Endpoints are the power supply on the item, and the existing power outlet or rack PDU. It is important to designate the power supply as the starting item/port, and the power outlet or rack PDU as the ending item/port.



	A	B	C	D	E	F	G
1	Starting Item	Starting Port	Cord 1 Type	Cord 1 ID	Ending Item Name	Ending Port Name	Ending Item Type
2	Network	PS1			R-PDU1	Output1	Rack PDU
3	Network	PS2			R-PDU2	Output2	Rack PDU
4	Device	PS3			OTLT-1	Socket1	Outlet
5	Probe	PS4			R-PDU4	Output4	Rack PDU
6	Probe	PS5			R-PDU5	Output5	Rack PDU

The wizard imports power connections between the item's power supply port (starting item) and what it connects to, either a rack PDU or a power outlet (ending item). The remainder of the electrical circuit, for example the rack PDU to power outlet to breaker, must already be defined in dcTrack.

The data must include columns for the item name and port for each of the two endpoints. Optionally, you can include the connection type and label for the connection between the two endpoints. The Item and Port Name columns should contain the name of the items and ports that match the existing item and port names in dcTrack.

IMPORTANT: In order to avoid being prompted to manually map columns-to-fields during the import process, make sure your spreadsheet columns are named in the same way as they appear in this table.

Column name/item	Description
Starting Item Name	Required column. The name of the item at the start of the circuit. A power circuit can only begin with the following classes: • Device • Network • Probe
Starting Port Name	Required column. The name of the port used by the circuit. For example, the name of the power supply such as

Column name/item	Description
	PS1 or PS2.
Cord Type	Optional column. This is an optional column for tracking the type of power cord used between the starting port and the next hop. For example, the cord type is `IEC-309-C13/IEC-309-C14 Generic Power Cord`.
Cord ID	Optional column. An optional column for the patch cord label.
Ending Item Name	Required column. The ending item can be either a rack PDU or a power outlet. Specify this in the last column, which is Ending Item Type. If the item is connected through a rack PDU, enter the rack PDU name and the rack PDU socket number in the next column. If the item is connected to a power outlet under the floor or overhead directly, skip the rack PDU columns. Typically, the sockets on a rack PDU are not numbered, so it is important to develop a numbering convention for the sockets. For example, call the socket that is nearest to the input cord `Socket 1`. Another convention is to number the sockets based on an orientation. For example, from top to bottom or from bottom to top when the rack PDU is vertically mounted, or from left to right when it is horizontally mounted. If the item is connected directly to a power outlet, this column indicates the name of the power outlet that is typically under the raised floor or above the cabinet. The outlet is typically named based on the power panel and breaker poles that feed it. For example, an outlet fed from panel PP2 in PDU 1A and uses the breaker in Poles 5,7 is called PDU1A/PP2-5,7.
Ending Port Name	Required column. This is the name of the receptacle in the rack PDU or in the power outlet. Typically, it is called Output01 for a Rack PDU or Socket1, Recp1 or R1 for a power outlet.

Column name/item	Description
	In most data centers, a power outlet will have only one receptacle.
Ending Item Type	Required column. Specifies whether the end item is a rack PDU or a power outlet.

Importing Data

Some fields are mandatory in dcTrack. During the import process, dcTrack prompts you to either add these fields to the source spreadsheet or to map them to existing cells in the source spreadsheet. You must either map or skip each field in order to move on to the next step of the Import wizard. If corrections are needed, you can go back in the import process by pressing the Back button and moving one filed at a time.

To import data from a spreadsheet or CSV file into dcTrack:

1. Select Administration > Wizards > Import.
2. In the "Select a file to import from" section of the page, click Browse. Locate the source file and click Open in the "Select a file to import" dialog. Click Next.
3. In the Import Wizards section, select the type of import - Items with Ports as Quantities, Comm Circuits or Power Circuits.
4. From the Import all Items to this Site drop-down, select the site you are importing the data for. Click Next.

   The data from the spreadsheet will be displayed in the data table at the top of the page and each column along with the dcTrack field it is mapped to is displayed in the field match panel on the bottom left of the page.

   - If dcTrack has successfully mapped each of the spreadsheet column headings to a field in dcTrack, the "You've successfully mapped this field! Click Next." message will be displayed at the bottom of the page. Additionally, all of the field values will be listed in the "Available values in dcTrack for field" box in the import panel on the bottom left of the page. Click Next.
   - If dcTrack could not map a spreadsheet column heading to a dcTrack field, you must do one of the following:

   a. Skip the field by selecting the "Skip column" checkbox.

OR

b. Manually select and map the fields to a dcTrack field listed in the "Map to dcTrack field" drop-down. Use the Add function to add the field or Map to map the field. dcTrack prompts you to enter related information for each field. Required information is indicated by a red asterisk (*). You are able select multiple items (with the exception of Models) using Ctrl and/or Shift.

5. After the last field is matched or mapped, click Next to open the data validation page. Click Validate to being the process.

Note: Large imports and/or use of hardware with specifications below the minimally recommended specifications can result in a processing time of up to several minutes.

During validation, the format and integrity of the data is verified. Any rows (records) that do not meet the import criteria are displayed in the import panel of the page along with the specific reason for the validation failure.

You can make corrections to data directly in the data table at the top of the page.

Any corrections, complete or partial, can be tested immediately for accuracy by clicking the Validate button.

6. Once data validation is complete and no more errors are displayed click Next > to open the Import page.
7. Before you begin the final import, it is recommended that you export the validated data to a new or existing spreadsheet using the Save As function so you have a copy of the most current version of the data.
8. Click on the Import button to begin the import process. The progress of the import as it happens is displayed on the page.

   You can stop the import at any time by pressing the Cancel button. Records imported up to the point before you canceled the process are retained in the database.

   At the end of the import process, a status message is displayed. For all records that are imported successfully, the time, date and other parameters of the import are saved as a separate import session in the Completed Import Session drop-down for future reference and additional functions.
9. Once the import is complete, all items are marked as New and are located on the respective item pages. You are advised to go to the item detail pages for each imported item in order to review and, if necessarily, revise or adjust imported items.

   All import sessions are contained in the Select an Import Session drop-down and can be referenced from there in the future.

Note: In order for an import session to appear in the Select an Import Session drop-down, more than one record must imported as part of the session.

Viewing Import Sessions

After a successful import and review of the imported data, the import session information can be viewed on the Import page by selecting the session from the Select an Import Session drop-down. The import sessions are identified by the Imported On (date), Imported By, Import Type, Quantity and Into Site fields.

Deleting Imported Data

Deleting all imported records can be useful if there is a global problem (or multiple problems) with the imported data in a previous session. This is equivalent to an undo function.

Note: If the import was done in multiple sessions due to needed corrections, you must go to each session and select Delete.

To delete previously imported data:

1. Select Administration > Wizards > Import.
2. On the Import page, select the import session from the Select an Import Session drop-down.
3. Click Delete.

Approving Import Sessions

After reviewing imported data and determining the data is correct, the status of all items can be changed at once to Installed.

Note: If the import was done in multiple sessions due to needed corrections, you must go to each session and select Approve.

To approve a previous import session:

1. Select Administration > Wizards > Import.
2. On the Import page, select the import session from the Select an Import Session drop-down.
3. Click Go.

Settings

Connecting to a Database

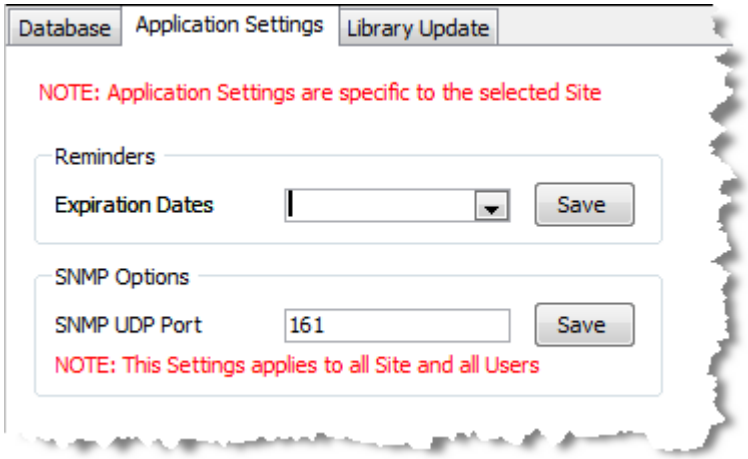
The Database tab in the Administration section of the application shows the ODBC connection information that the Windows Client uses to connect to dcTrack.

You do not need to modify the information on this tab. It is set automatically when the client is downloaded from dcTrack via the Management Client.

Application Settings

The Application Settings tab allows Gatekeepers to:

- Set warranty expiration reminder dates for the currently selected site.
- Set the default SNMP port for all sites and users. This is the port used by the client to send SNMP messages. The destination port is always UDP 161.

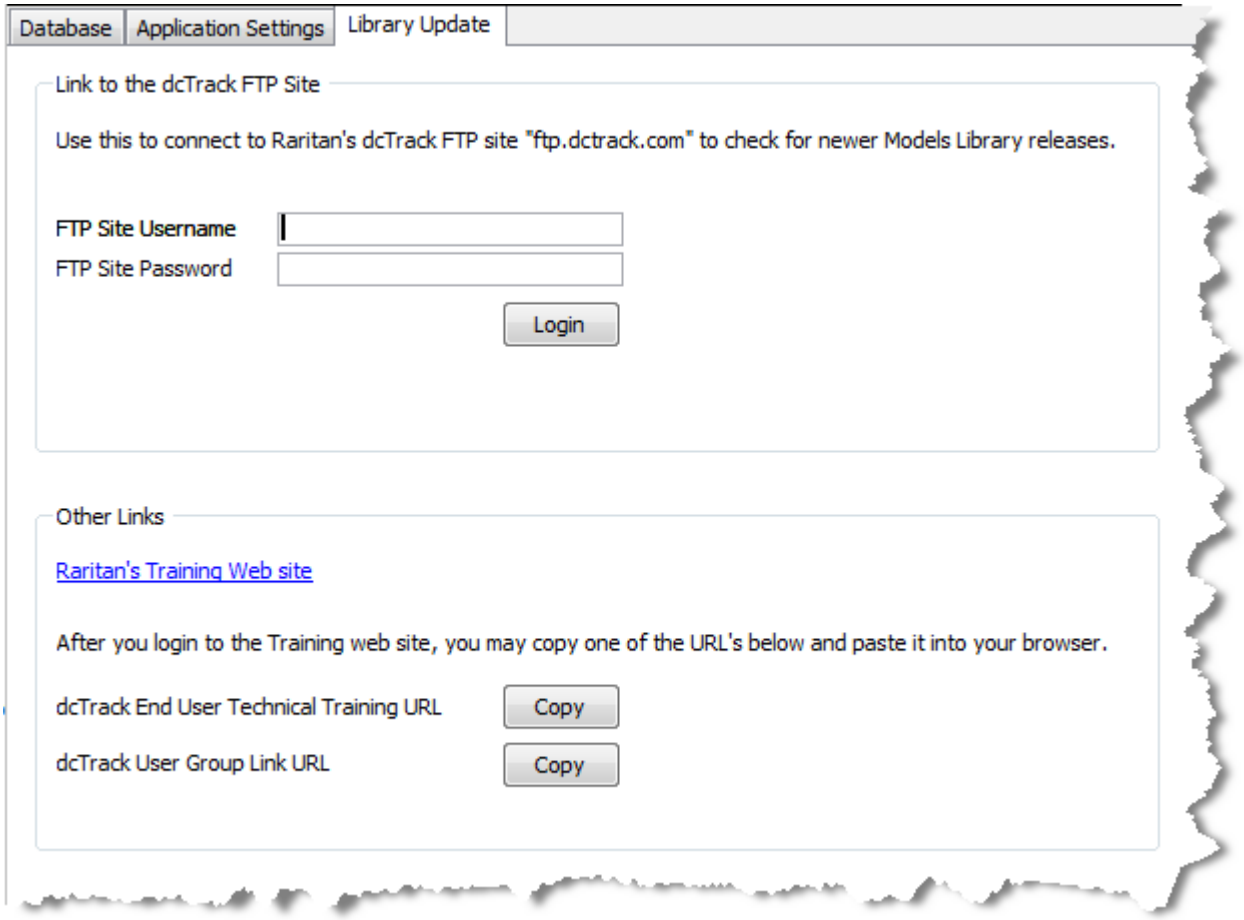


Note: If you are not using port 161 as your default on your servers, dcTrack will not be able to communicate with the server on your SNMP capable items.

Library Updates

The Library Updates tab provides you with the ability to connect to Raritan's dcTrack FTP site where you can check for and download a new version of the Models library as well as download other relevant files such as spreadsheet templates. See ***Import Wizard Templates*** (on page 165). In order to access the FTP site, you need a FTP username and password. Contact your administrator for this information.

You are also able to access Raritan's Training website from this tab. You need a username and password, provided to you by Raritan's Training Department, in order to access the website. In addition to dcTrack courses, you can also access the dcTrack user group from the training website.


Database
Application Settings
Library Update
Link to the dcTrack FTP Site
Use this to connect to Raritan's dcTrack FTP site "ftp.dctrack.com" to check for newer Models Library releases.
FTP Site Username
FTP Site Password
Login
Other Links
Raritan's Training Web site
After you login to the Training web site, you may copy one of the URL's below and paste it into your browser.
dcTrack End User Technical Training URL
Copy
dcTrack User Group Link URL
Copy

Items & Ports

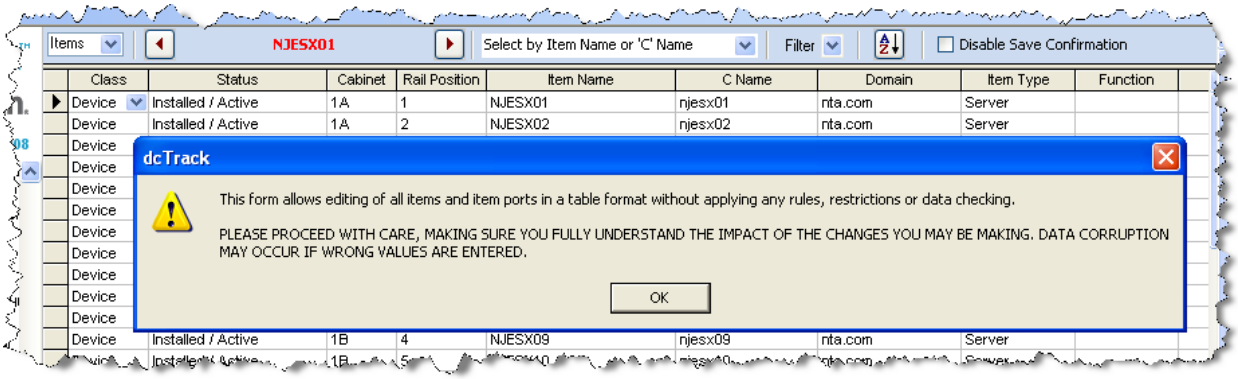
Gatekeepers can use the Items & Ports page to directly make changes to the item and port data in dcTrack. This is an alternative to using the item and port edit functions to make changes. It is critical that any changes made to the data be accurate to avoid corrupting the data in the application. There are no data integrity checks on this page. Changes you make here are reflected on the item and port pages.

Warning: Since data integrity checks are not present in this page, the Gatekeeper must exercise extreme care while editing the data. The Gatekeeper should be aware that changes made here may have an impact on related data.

If you do not want to be prompted to save the changes you make on this page each time you make a change and move out of the data cell, select the Disable Save Confirmation checkbox.

To access the items and ports:

1. Select Administration > Items & Ports.
2. Read the warning and click OK to close it.
3. Make changes as needed.



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